The Builder.

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Board of Trade Report on Strikes.

THE Labour Department of the Board of Trade has issued a Blue-book containing the Report of their Chief Labour Correspondent on Strikes and Lockouts in 1897. It is a judicial document full of carefully made out statistics, dealing only with facts and avoiding, as such a publication should, all expressions of opinion. But it is a valuable record of the extent to which strikes have interfered with labour during last year, and of the origin and results of the strikes.

Under the heading "Causes of Disputes" it is shown that the most fertile source of dispute is as to the price to be paid for labour. But while the proportionate average of such cases is still high, the tables show that it has been steadily declining during the last five years. In 1897, out of 230,267 workmen engaged in strikes, 106,293 struck on questions of wages, making 46·2 per cent. of the whole. But in 1896 the percentage of wages strikes was 58·3; in 1895, 54·3; in 1894, 72·4; and in 1893, 89·2. Last year has been a year of rising wages, and in accordance with this it is to be noticed that out of the number engaged in wages strikes 69,968 were striking for an increase of wages, as against 13,419 striking to resist a decrease of wages. The remainder of the numbers engaged in this branch of strikes, 22,906, struck for other matters in regard to wages, the nature of which is not specified. But the large proportion striking for higher wages shows the general feeling that higher wages were a probably attainable object. The figures in this table, it should be observed, are for all trades.

In spite of the tendency, which is recognised in the Report, towards rising wages, it does not appear however that so much success was obtained by the workpeople as might have been expected. In the table giving the results of strikes for all trades, it is shown that out of the 106,293 persons who struck on questions of wages, only 28,918 obtained their object; 32,480 had to give way to the employers, and 42,678 accepted "compromises." The case of the remaining 2,217 is entered as "indefinite or unsettled." But when we come to the table in which the strikes are treated *en masse* and the trades divided, the column devoted to the "building trades" gives a very different result as between employers and employed. Here we find that out of the total of strikes from all causes, 73·8 per cent. were settled in favour of the workpeople, and only 12·9 in favour of the employers; the remaining 13·3 being entered as "compromised." The statement, as far as it goes, is a formidable proof of the increasing power of the employee, though it must be remembered that 1897 was a busy year in the building trades, and labour consequently in more demand than usual.

The table comparing the causes of disputes (all trades) is instructive in some other points. The proportion of disputes as to hours of labour has risen enormously during the last five years, especially in regard to demands for decrease of hours. In 1893, out of 636,386 workpeople engaged in disputes, only 1,191 were striking on hours' questions; while in 1897, out of 230,267 engaged in disputes, as many as 52,769 were concerned with hours of labour. The difficulties raised as to the employment of particular classes of persons have also increased in a very considerable ratio; this class of disputes affecting 7,310 persons out of 636,386 in 1893, and 19,529 out of 230,267 in 1897. The total number of workpeople concerned in trade disputes has however diminished very much from 1893 to 1897, though not in a regular descending scale, the figures standing thus:—

	Total number concerned in disputes.
1893	636,386
1894	324,245
1895	263,758
1896	198,687
1897	230,267

As to the means by which strikes or disputes have been terminated, it is noticeable that arbitration is going out of favour. In 1895 only 25 disputes out of 876 were settled by arbitration, and in 1897 only 14 out of 864. Direct arrangement or negotiation between the parties to the dispute has been of late years the most frequent agency of settlement, and seems to be on the increase; 498 out of 876 disputes having been settled by this means in 1895, and 624 out of 864 in 1897. This is a satisfactory indication, as it seems to imply that employers and employed are learning to look at things in a greater spirit of forbearance, and to be more ready to listen to reason and to one another.

A considerable portion of the Report is occupied by brief data of all the strikes or disputes in which not less than ten workpeople were involved, or which were not settled in a single day, divided up into trades, and with columns for place, occupation of strikers, cause or object of the strike, and a brief statement of the result. It is of some interest to run through these causes and results in the pages devoted to the building trades. From the concise statements we gather nevertheless some indication of the tone and temper of employers or employed, or both; also of the degree of interference with an employer's method of carrying on his business which the unions now have in their power and make use of; though in some cases it seems that a firm attitude on the part of the employers has had its effect. For instance, a strike of plumbers at Preston is described as (December 18—April 30*) "for the withdrawal of a black list of men engaged in previous strikes in four shops on a question of painters being employed on glazing work"; there is no punctuation and the meaning is not quite clear, but the result is "work resumed on understanding that painters should have an equal right to glazing work; also agreed to work with non-unionists." The last very unusual item shows that the workmen were hardly the gainers in the contest. A somewhat similar result followed on a bricklayers' strike at Colchester (September 24—October 16) arising from the objection to the employment of a particular non-union man, the firm having posted a notice that no distinction should be made between unionists and non-unionists in their employ. The result in this case was—"places partly filled by non-union men, some union men resumed, agreeing to work with non-union men." In another case a little lower down in the list, however, a strike among builders' labourers at Ipswich (June 24-25) owing to refusal to work with a non-unionist, we find recorded "man joined the union;" a pretty clear case of pressure put on a man

* The figures in brackets represent here the date and length of duration of the strike. The first date is in all cases in 1897.

to join, as the only way out of the difficulty, the strikers being thirty-three in number against this single outlier. In the case of a builders' labourers' strike at Leeds (March 9-18) arising out of refusal to work with men who were not members of the union, the result is "employer agreed to employ union men." In a carpenters' and joiners' strike at Leeds (May 24-26) arising out of refusal to work with a non-unionist, the result is that "the non-unionist was dismissed after a deputation had seen the employer." One cannot congratulate either employer or workmen in this case. A small strike at Batley (July 3-27) in which only seven men (builders' labourers) were engaged, arose out of objection to employment of a non-union man at less than union terms. Here both sides seem to have stuck to their text, the result being, "men obtained employment elsewhere, and shop was closed to trade-unionists"; at least, the apparent meaning is that the employers refused to admit trades-unionists for the future, though, like some others of the results, it is somewhat vaguely expressed, and might mean that the trades-union men were forbidden by their own body to seek work there. In the case of a small strike at Carlton (Notts) of bricklayers, stonemasons, and labourers, ten men in all (June 30—July 3), who objected to work with a non-union slater, the result is stated as "shop blocked to union men," which again is vague, and may or may not mean the same as the last quoted result. We take it, however, that they both mean that the employers would have no more union men; but it ought to have been put more clearly. The same result (if our reading is right) followed a small strike, of one day's duration, of thirteen joiners at Great Neston (January 13) to compel two non-unionists to join the union; result—"trade unionists replaced" by other men; which is as it should have been. In other cases we find clear evidence of the tyranny of trades-unionism over solitary workers. There is a strike of stonemasons at Leeds (October 2-29) to compel payment by a fellow-workman of a fine inflicted for working overtime contrary to general rules; result—"fine paid by the man complained of." We have got into the habit of reading these things as if they were matters of course; yet can anything be more thoroughly immoral and contemptible than the state of things revealed in this concise record? One man, who ought to be a free agent, chooses to do some work beyond working hours and get paid for it: sixteen men leave off all their work for two days, injuring their employer and their own families, in order that pressure may be brought to bear upon the one man to pay a fine to the union for having made a free use of his time, and been more industrious than the rest. No doubt the man was pressed by the employer, who probably told him he had better pay the fine than have all the work stopped; but such a state of things is monstrous. Again, there is a case of builders' labourers at Leeds (March 9-18) refusing to work with non-union men; result—"employer agreed to employ union men." If any members of a society in any of the liberal professions made use of such means to compel or induce the employment of members of their own body, every one would cry shame on them, and they would probably be ashamed of themselves; but workpeople may employ these tactics with impunity and self-laudation.

The majority of the demands for increase of wages appear to have been successful; but there are important exceptions. At Halifax twelve carpenters struck for an advance in wages of ½d. per hour (July 6-12), but the result is "men found work elsewhere, and shop closed to trade-unionists." At Middlesborough 120 painters struck for an advance from 7½d. to 8½d. an hour, and alteration in working rules (March 1—July 3); but after this long strike we read "work resumed on previous conditions." Simularly at Pudsey, where eighty builders' labourers struck for uniform rate of wages at 6d. per hour, some of the men being paid at 5½d. (May 3-15); result—"work resumed at previous rates." At Scarborough 100 bricklayers struck for an advance from 8d. to 9d. per hour (August 2—March 19, 1898), but after this long waste of time and loss of money, "at a conference convened by the Mayor of Scarborough the men accepted 8½d. per hour, *previously offered by employers*." Most of these strikes, it will be seen, were dead loss to every one concerned. But it must be admitted that these are a small minority of cases.

The strikes arising from disputes as to who should execute any particular class of work, or how and where it should be done, are pretty numerous, and give an idea of the amount of interference which employers now have to expect from their workpeople in carrying on their business; and in most cases the employers seem to have felt compelled to yield. At Leeds thirty-five carpenters struck because they refused to fit window casements made by a firm with whom the trade was in dispute (June 8-9). Result—"the employer agreed to obtain no more goods from the firm in question." This seems rather pusillanimous on the part of the employer, who apparently gave in at once; but what a system of petty tyranny this discloses! An objection to tilers laying cement flooring for wood blocks, on the part of six plasterers at St. Helens (Sept. 20—Nov. 20) has more appearance of reason in it, and one is not surprised to find that the claim of plasterers to do the work was admitted. On the other hand the strike of fifteen bricklayers in London against the employment of tilers and slaters on work alleged to belong to bricklayers (January 18—February 27) ends in "men replaced." This was probably one of the cases, which we know are not infrequent, of bricklayers persisting in a claim to do tiling work of special delicacy and which requires special hands. A strike of thirty London bricklayers (March 23-24) against the employment of a man, not a bricklayer, to cut out bricks for the insertion of wood blocks, had the result that "work was resumed unconditionally by some of the men; others were not reinstated." This was a piece of petty and spiteful interference (since there is no bricklaying skill required in cutting out bricks) which the men seem to have been unable to uphold. Forty-eight London bricklayers struck for three months and a half (July 28—Nov. 12) against tilers being engaged to lay Broseley tiles; the strike was ended by an agreement that bricklayers should do tiling work in future. The tilers would probably have done it better; and this custom of bricklayers claiming all tiling work is one which ought to be looked into. A rather exceptional case (apparently) is the strike of twenty-one plasterers of London (in November) who objected to bricklayers doing wall tiling. The result is thus stated: "Bricklayers agreed that tile fixers should do the work on this particular contract on condition that they should do the work at a job under the same employer in London." It would appear from this that the plasterers struck on behalf of the tilers; the only reason one can imagine is that they found they could work better with them, or that a better joint job would be made, in which they were probably right. The sort of compromise accepted shows (if it needed to be shown) how completely apart these kind of strikes are from any care for the interests of the work; if the bricklayers were the fittest workmen to do it in one place they were the fittest in another; but the sole object was to get what they could. Several strikes against the introduction of ready-dressed stone on the work were successful. Sixteen stonemasons at Merthyr struck on this plea (March 24—April 3), and "it was agreed that dressed stone already in order should be fixed, but that all stone subsequently required should be dressed on the site." Again, we have fifteen stonemasons at Swansea striking against setting stone dressed at a quarry in the Forest of Dean (October 30), with this extraordinary result—"employer agreed to have stone redressed, paid 2*l.* 10s. to Stonemasons' Society, and promised for the future not to use stone dressed at the quarry." It appears to have been actually demanded that he should make work for the masons on the spot by having the dressed stone re-dressed. This case is really little better than blackmailing. Why an employer is not to have stone dressed at the quarry if it suits his plan of work and the circumstances better it would be difficult to say; the crime in the eyes of the stonemasons is that some work is done by other men which they would like to be paid for.

Against strikes for higher wages one has nothing to say as far as their object is concerned and as long as the demands are reasonable; every man is entitled to get as much as he can for his labour; and the fact that in so many cases the demands have been conceded is an indication that they were not unreasonable, though it may be more than questioned whether a strike is the best means of settling such a dispute. The ugly part of the documents before us lies in the disclosure they make of the petty and selfish jealousies of one trade against another, and the vexatious interference of workpeople with the conduct of a business, not with the view of getting work better done, but with the mere desire to oust others and to secure advantages for themselves in a manner which, if it were practised by people in higher ranks of life, would be universally scorned and condemned.

NEWARK PRIORY, SURREY.

A FEW weeks ago two letters appeared in these columns*, drawing attention to the ruins of the Augustinian Priory of Newark. We now give a ground plan of the remains, some sketches, and some additional notes on its architectural features.

The ruins stand near the banks of the river Wey, about two miles east of the village of Woking. The monastic buildings have been totally destroyed, but a considerable fragment of the church still stands,

* *Builder* September 24 and October 1.

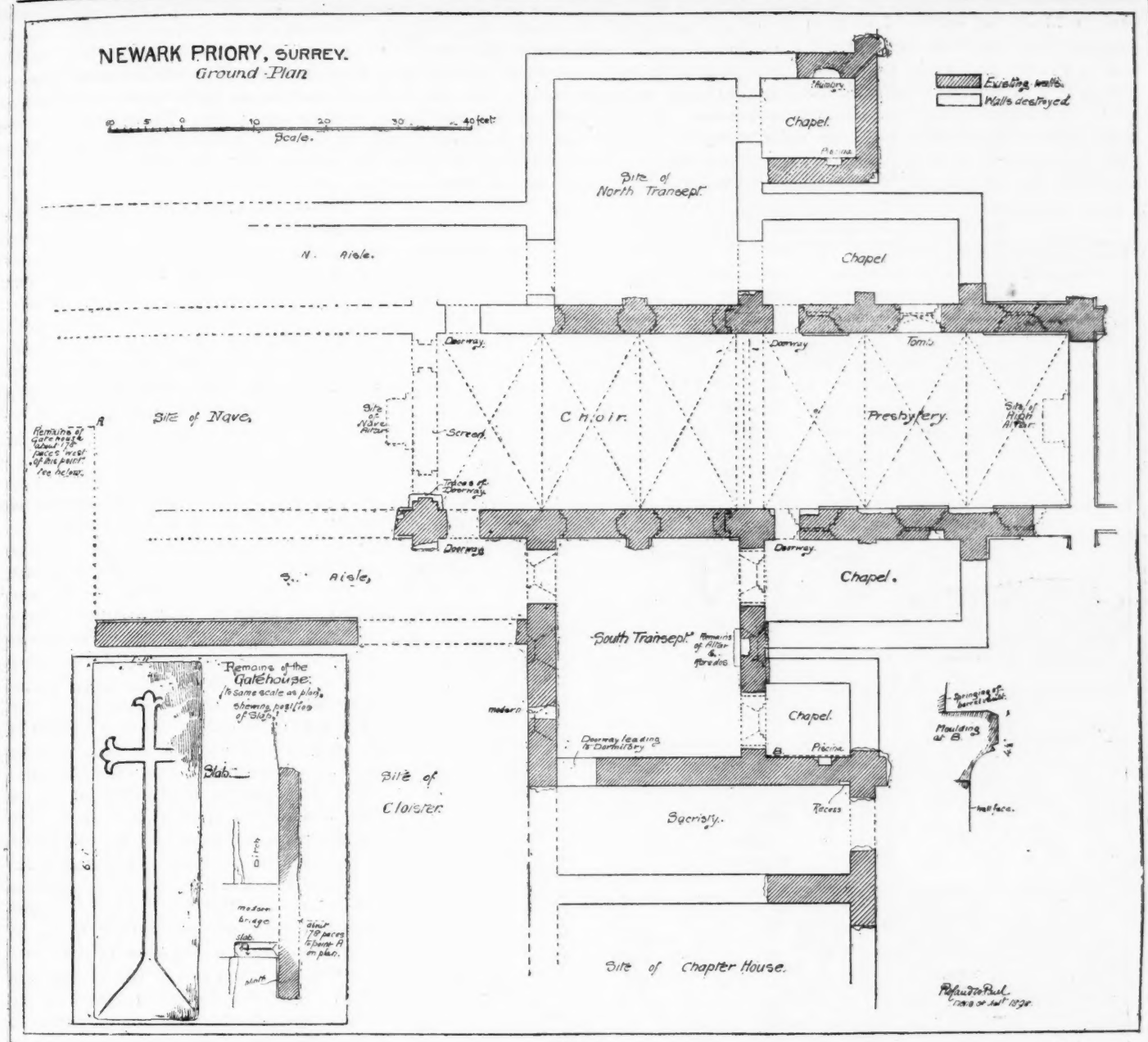


Fig. 1.

including three bays of the north side of the presbytery and two on the south side; the walls of the choir; the south transept, nearly complete, with the exception of its roof; the walls of one of the chapels of the north transept; and a portion of the wall of the south aisle of the nave. To the south of the transept is a fragment of wall marking the junction of the chapter house with the sacristy. The walls are built throughout of flint, with an admixture of tile in places. The dressings, where they remain, are of clunch, but the major portion has been removed, and what remains has suffered much from exposure to the atmosphere. Nevertheless, one or two details remain, showing that although the main lines of the building were severely simple, there was some elaboration in the details of the interior.

The nave, when perfect, was probably seven bays in length. The easternmost bay was divided from the rest by a screen, against which the nave altar was placed, and formed a small retro-choir approached by doorways in the side screens. One of these doorways still remains, and is shown in the view taken from the south (fig. 2). The screen walls here and further eastward were about 10 ft. in height. There are also some traces of one of the two doorways that flanked the nave altar in the cross wall, and the probable arrangement has been suggested on the ground plan (fig. 1). The remaining two bays of the choir were likewise divided from the transept by stone screen walls, and above on either side were two lofty arches, formerly deeply moulded, which must have been an imposing feature of this part of the church, Against these screen walls the stalls were placed. The choir was 45 ft. long and 24 ft. broad. The presbytery was of three bays, 42 ft. long and 24 ft. broad, lighted on either side by single lancets in each bay, and perhaps by a triplet at the east end. A portion of the return wall remains at the north-east angle, and the double buttresses can still be traced. The sills of the side windows were kept high on account of the lean-to roofs of the chapels which stood against the sides of the presbytery for two bays of its length. Both the choir and presbytery were vaulted, and at the north-east angle and on the north side of the latter the caps of the vaulting shafts remain (figs. 3 and 4). The arrangement was a group of three shafts, the centre one being detached; perhaps of Purbeck marble. There was a simple chamfered plinth-mould round the inner face of the presbytery wall, and this remains fairly perfect except where the bases of the vaulting shafts have been broken away. A bolder plinth of the same kind remains on the outer faces of the walls in the easternmost bay. This plinth was returned round the side chapels.

In the centre bay on the north side is a rough opening piercing the entire thickness of the wall. Overhead can be seen the traces of vaulting, and there is little doubt but that a tomb of importance originally stood here. The division of choir and presbytery was marked by an arch spanning the church in line with the east walls of the transepts, and a second arch crossed the church over the screen dividing the choir from the nave. Immediately eastward of the first-named arch (which was carried apparently on corbels) are two doorways, one on each side of the presbytery, which formed the upper entrances to the choir, and also communicated with the chapels flanking the presbytery. The chapels were, when perfect, 27 ft. long and 11 ft. broad. They had barrel vaults nearly semi-circular in form, and were covered by lean-to roofs. Beyond them, approached also from the east wall of the transepts, were smaller chapels about 12 ft. long, and 10 ft. broad on the south side, and 13 ft. by 11 ft. on the north side. A curious feature here is the double wall, a space of about 18 in. being left between them. The small chapel of the south transept is, judging by the

string-course at the springing of its barrel-vault, evidently of earlier date than the corresponding chapel on the north, if it is not the earliest part of the church; but the arrangement of separate outer walls dividing the chapels seems to have been the same on both sides. The position of these walls and the marks of the chapel roofs against the outer wall of the south transept are shown on the ground plan, and in the sketch of the exterior of the south transept (fig. 5). On the inner face of this east wall, set centrally between the two pointed arches leading to the chapel, are the remains of an altar and reredos. The altar was 5 ft. long and rather over 3 feet high. About 2 ft. 6 in. above this is a recess 2 ft. 6 in. square, and on either side of this are traces of moulded brackets or corbels. The moulding—a very delicate one—remains clearly on the south side. Doubtless there was a similar arrangement on the north transept. The south transept has remains of corbels in the angles, and traces of intermediate ones. These probably carried the timbers of a wooden roof, as it is evident that the transepts were not vaulted.

The chapels already described, east of the transepts, both had barrel vaults. Those next the Presbytery were nearly semi-circular, while those of the outer and smaller chapels were slightly pointed. Traces of aumbries and piscinæ are to be found in several places, and are shown on the plan. In the south wall of the south transept, near its western end, and a little distance above the ground level, is the doorway that led from the transept to the dortor, and on the outer face of this wall are the marks of the dortor roof. South of the transept was a sacristy, the full length of the width of the transept, and 12 ft. wide. The wall at its south-east angle remains, showing the angle of the Chapter House, which was the next in order on the east side of the cloister. In the north-east angle of the sacristy is a small recess. Everything south of this has been destroyed, but digging might possibly recover the lines of the foundations, and the extent of the cloister. The south aisle wall of the nave remains for a length of 35 ft., at a distance of about 23 ft. from its junction with the west wall of the south transept. Against the transept are the weatherings of its lean-to roof. The clearstory of the nave was a single lancet. There was no triforium. The wall of the aisle is about 3 ft. 6 in. in breadth, and has no features of interest in itself, but it shows the aisle to have been 11 ft. in width. A confused mass of stone, some of it worked, immediately south of the site of the nave altar, marks the eastern respond of the (ritual) nave arcade. The arrangement here, although much ruined, might be found by judicious excavation.

At a distance of about 178 paces due west of the present aisle wall, and nearly central with the church, is a considerable length of walling composed of flint and dressed stone. This probably marks the site of the gate-

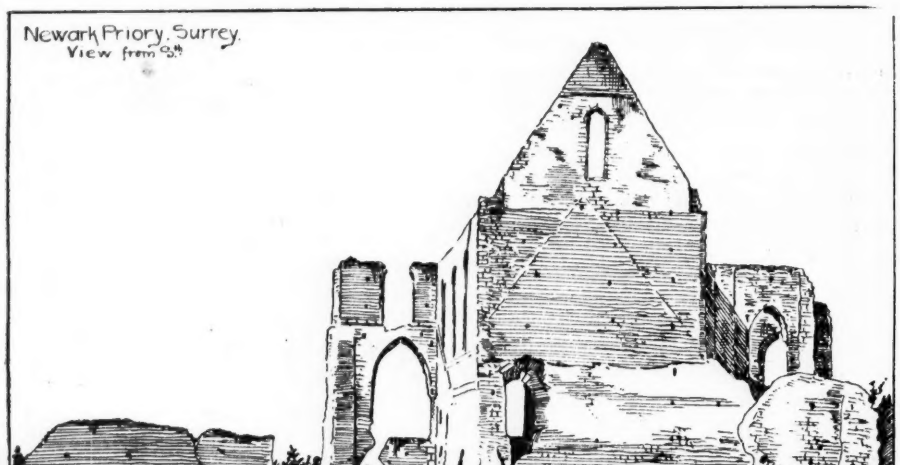


Fig. 2.

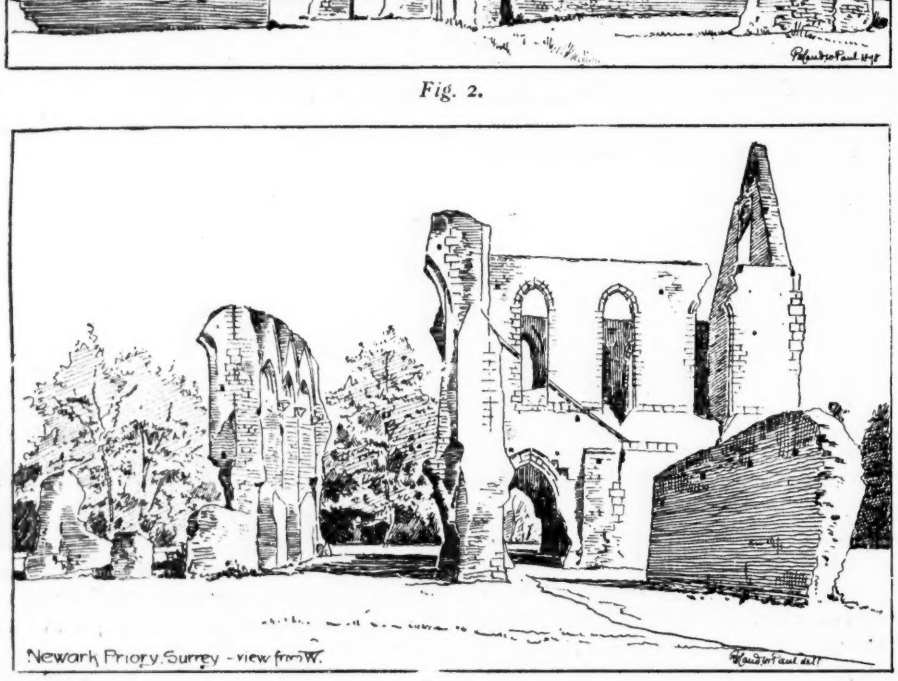


Fig. 3.

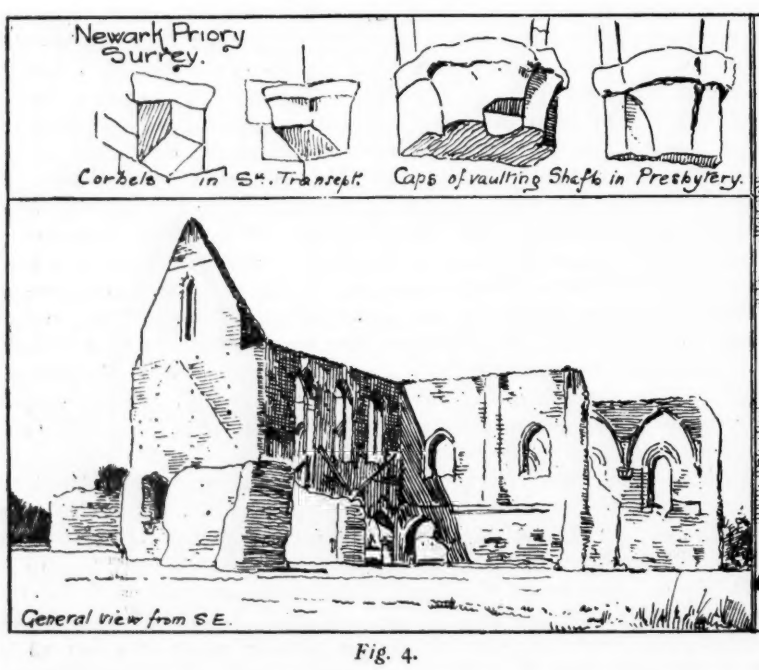


Fig. 4.

Fig. 5.

house. The wall runs north and south. At a height of about 5 ft. 6 in. from the stream is a chamfered plinth, and above this the wall in places remains for a height of 2 ft. Its length is at present about 32 ft., and on its west side is a modern bridge about 10 ft. in width. It has the appearance of being on the site of the original approach, and on its south side is a stone 6 ft. in length and 2 ft. in breadth, with a cross with fleur de lys termination and a simple "calvary" base. The stone is slighted coped in form, and is very roughly executed. We give a measured drawing of this, and a plan of the gatehouse wall, showing the present position of the slab (fig. 1). At Newark the river Wey makes a considerable bend, and at a little distance south-west of the church is the mill, which no doubt stands on an old site. The present ruins of the Priory are of Early English date, with the exception of the smaller chapel of the south transept, which appears to be rather earlier.

NOTES.

The Welsh Water Scheme.

CONTROVERSIAL correspondence in the *Times* during the past week, between Lord Farrer and an anonymous writer who signs himself "Thames," opens up a very pertinent question as to whether the stream principally relied upon to supply the reservoir of the London County Council's Welsh water scheme is really capable in times of drought of yielding much water. The anonymous writer says that the stream has recently been completely dried up for a month. But Lord Farrer replies that he is credibly informed that that statement is absolutely without foundation. It would be interesting to know which is right. It would have been more to the point had Lord Farrer supplemented his observations by giving the actual flow of the stream during the period in question; as it is, all we can glean is that he has been informed, by one who knows the district well, that the stream has not been "completely dried up." This is not very re-assuring when London ratepayers are being asked to support a scheme that will cost them many millions of pounds. We do not suppose that either one or the other of these controversialists are correct in their estimate of the value of the stream for water-supply purposes. The impervious strata, relieved only by joints from which the stream issues, is not calculated from a scientific point of view to hold much water in reserve during times of drought. The river can only hope for much water during rainy periods, and we are not surprised that the question has arisen. At the same time, it must be remembered that the engineer of the scheme has not suggested that the water is to be taken direct from the stream, but that it is to be stored and then drawn upon. The capacity of the storage reservoir is the chief point. If the main stream has really been "dry for a month" the reservoir will have to be of unprecedented dimensions. With past experience in front of us nobody expects a water-supply engineer to be much of a mathematician. The same correspondence deals with the flow of the Thames during the drought. That is an old tale; all are now agreed that if that river is to be chiefly drawn upon, as London grows large storage reservoirs must be made.

The Workman's Compensation Act.

WHEN this Act was under discussion in Parliament we pointed out that it was absurd to limit the application to persons who were at work on buildings not exceeding 30 ft. in height. This limitation was unjust to a large body of workmen, and was based on no good reason. We scarcely expected, however, to see the absurdity of this restriction so soon illustrated. But last Saturday a case came before the Court of Appeal which involved this point. The County Court judge had decided that as a workman was injured while employed on a building which, at the time, did not exceed 30 ft. above the street level, the employer was not liable, although, ultimately, the building would exceed that height, and this decision was upheld by the Court of Appeal. We have therefore this ludicrous result, that when a building is 28 ft. high, A may be injured and be unable to recover compensation; and that next day, when the building is 32 ft. high, B may be injured and have a good right of action. The statement of such an instance as this is sufficient to show that the Act must, in respect of buildings, be amended.

The Smoke Nuisance.

WITH the approach of winter the subject of fogs has again cropped up. Lord Midleton a very active worker in regard to the London smoke nuisance, calls attention to the circumstance that with a north-east wind the smoke now travels over nearly the whole of the county of Surrey, and may be distinctly traced for twenty-five miles from the metropolis. We do not call into question the extreme limit to which the smoke may travel, but we think that the distance mentioned must be very exceptional. "Shrubs and flowers which twenty years ago it was possible to grow at Wimbledon cannot now be preserved" from this smoke. That may be correct for Wimbledon, but it will not do for "nearly the whole of the county of Surrey." Lord Midleton would do well to confine the nuisance to the area really affected by it, where it is bad enough, in all conscience. He asks for a short Act making it necessary for every kitchen chimney henceforth constructed to be so fitted as to consume its own smoke. This, he thinks, would "work wonders." We doubt it; "henceforth" is not strong enough to do it, if we are to have any immediate relief. There are two ways of curing this abominable nuisance, caused not so much by the factory chimney, which has been much in evidence during the past few months, as by the chimneys of private houses. These are (1) to have all chimneys now altered so that they shall not create smoke, or (2) to make anthracite the only kind of coal to be used. In either case property owners would be heavily taxed. For, if the first proposition be adopted, many structural alterations would be necessary; and if the second, then nearly all the grates and fireplaces as at present made would have to be removed to make way for metal capable of withstanding the great heat produced by anthracite. Of the two, the latter would, perhaps, be the more sensible, but even the London County Council, upon whom Lord Midleton calls to do its duty, would quail before promoting a Bill of such a far-reaching character, not to speak of the question whether there is anthracite enough to be had.

The London Building Act and Party Walls.

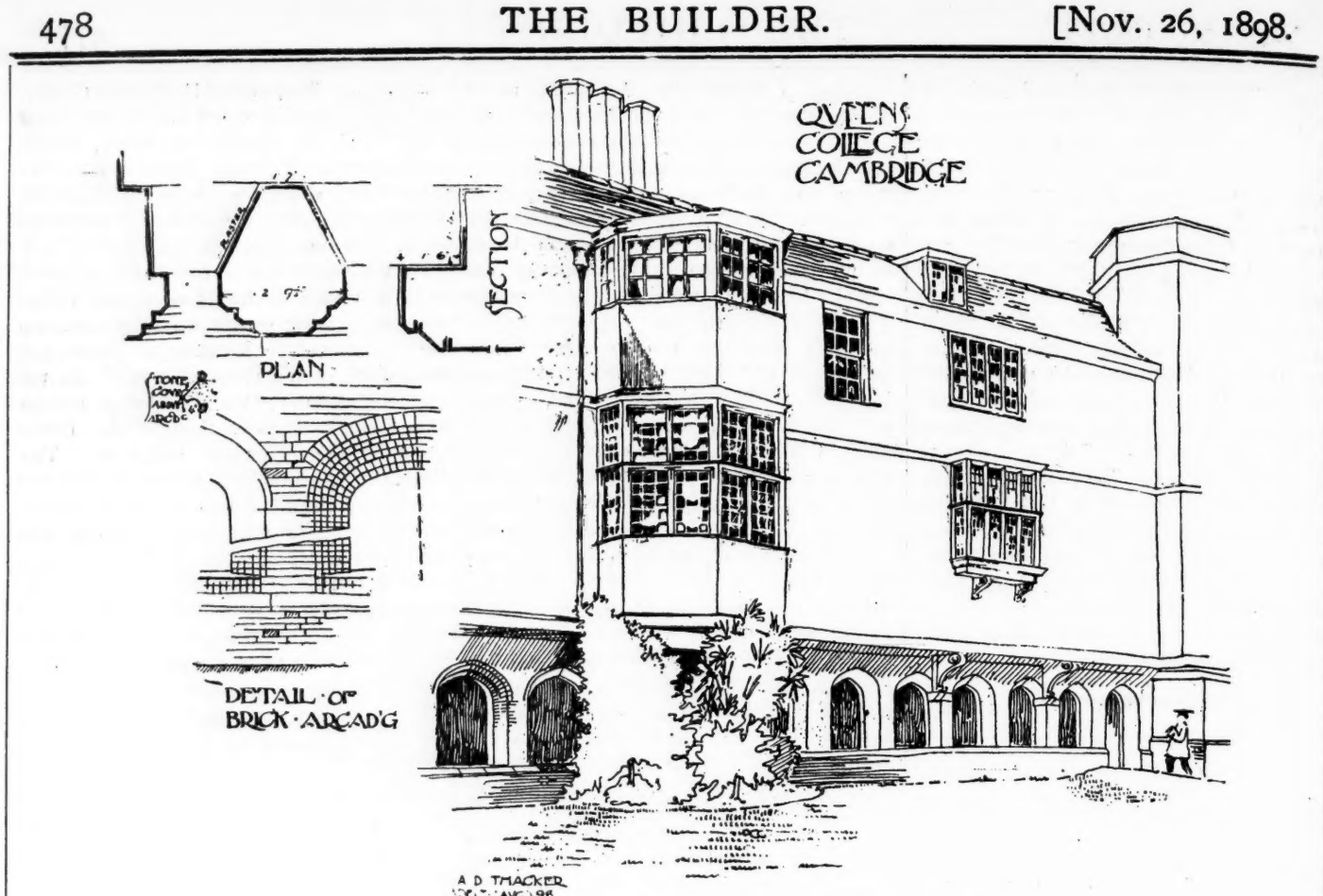
THE case of Hobbs and Grover, which came before the Court of Appeal last week, shows how important it is that notice in regard to party walls, under Section 90 of the London Building Act, 1894, should be full and complete. By that section, the owner of a party wall shall not be entitled to do work upon it unless at least two months before doing such work he has served a notice on the adjoining owner "stating the nature and particulars of the proposed work." In the case in question the Vacation Judge, though with some hesitation, thought the notice given by the defendant sufficient. The Court of Appeal thought the notice was not sufficiently clear, but in a true businesslike way intimated its defect, and so the case was settled by consent. But that fact does not make it less important, since it shows the expense and trouble which may be caused unless the notice gives the most complete indication of the work that is to be done.

Electric Traction on the Underground.

THE Committee appointed by the Board of Trade to deal with the question of ventilating the Metropolitan tunnels reported last year that the best solution would be the adoption of electric traction. The directors of the Metropolitan and the Metropolitan District Railway Companies have decided to undertake an important experiment on electric traction preparatory to introducing it on their lines. An electric installation will be laid down between Earl's Court and High-street, Kensington, which will be able to deal with trains as heavy as those now running. This particular section of the companies' lines has been chosen because on it occur some steep gradients, which will put the new system to a severe test. The present steam locomotive traffic will not be interfered with by the experiment. Between the rails there will be two parallel conductors from which the train will pick up current as it goes; when the electric system is introduced these will be permanently available. The problem of converting the present steam system into an electric one is very difficult, as in the comparatively short circuit there are twenty-seven stations, and fourteen circle trains running seven on each line. If at any time three or four trains wanted to start simultaneously, there would be an enormous demand for power from the central station, which would need to have a very great capacity to meet such emergencies, and hence it could not be run economically. The experimental work for this important trial—which, we understand, is being done by Messrs. Siemens Bros.—will be completed by the summer of next year, the consulting engineer being Sir John Wolfe Barry, with whom is associated Mr. W. H. Preece, Engineer-in-Chief and Electrician to the Pos Office.

Straw in the Streets.

IN the "Sanitary Chronicles of the Parish of Marylebone" for October (drawn up we presume by the Medical Officer) there are some remarks as to the increase of the practice of laying down straw in the streets in cases of illness, which it is contended should only be done under the most "exceptionable" (*sic*) circumstances, and that it ought not to be done where there is a wood pavement, which is not a noisy pavement. It is com-



From a Sketch in the Birmingham Architectural Association Report.

plained that straw is laid down more frequently in the Marylebone thoroughfares than elsewhere, in consequence of a considerable number of nursing homes or private hospitals having sprung up in that district. It is suggested that definite powers should be obtained to make regulations in regard to laying down straw in the streets, and also to deal with it before it becomes offensive. The point is worth consideration, and it was as well to draw attention to it. But we may observe that wood pavement can hardly, after all, be called a noiseless pavement, though it is quieter than macadam; and that there are cases of illness in which absolute quiet is the condition for any chance of recovery. That can only be obtained in many cases by the straw in the street, and it would be rather dangerous to give officials power to interfere or cause delay in what may be a matter of life or death. Any regulations or by-laws should be very carefully and considerately worded, at all events.

Worcester Hop Market Hotel Competition.

THE Worcester Hop Market Improvements Guardians had a wrangle on Friday last week over the competition designs for a new Hop Market Hotel, which ended in a very characteristic manner. Four designs were sent in, and a professional assessor had been appointed (whose name, however, is not given in the report in the *Worcestershire Echo*), who had selected No. 3. Certain members preferred and spoke in favour of No. 1. The competition was limited to Worcester architects, and the designs were sent in under motto, but it was casually admitted in the course of the discussion that the names of the architects were all known. One member spoke strongly in favour of accepting the assessor's award; but eventually the choice was put up to ballot, quite independent of any reference to the assessor, with the result that No. 4 was selected. This affair seems to have been about as absolutely mismanaged as anything could be; and if, as we must suppose, the assessor has been paid a fee for his opinion, the Guardians have thrown that money away.

Birmingham Architectural Association.

THE Report of the Birmingham Architectural Association gives a satisfactory account of the last Session, though there is a regret expressed that the sketching visits were not better attended. Some sketches made on the occasion of the visit to Cambridge are however published, one of which we reproduce; it is admitted that on this occasion there was so much to see that it was difficult to find time for sketching. The following interesting papers are down for the remainder of the Session, which commenced when the President read his opening address on October 14:—

Nov. 25.—E. ANTONY LEES.—'The Elan Valley Water Scheme.'

Dec. 9.—R.I.B.A. Dinner and Reception.

1899.

Jan. 13.—JOHN BELCHER, F.R.I.B.A.—'Hampton Court' (if engagements permit).

„ 27.—GEO. H. FELLOWS PRYNNE, F.R.I.B.A.—'Ecclesiastical Screen Work.'

Feb. 10.—BERESFORD PITE, F.R.I.B.A.—'Ancient and Modern Buildings in Palestine.'

„ 24.—H. B. CRESWELL.—'The advantages of being an Artist.'

Mar. 10.—H. T. BUCKLAND.—'The B.A.A. Excursion to Cambridge,' with Lantern Slides by John Ward."

A new departure has been made by the offer of a studentship prize of fifteen guineas "for the best set of measured drawings and a design for a subject to be selected by the Council"—thus combining the study of old design with the invention of new. We may add that the Birmingham Architectural Association are also engaged in collecting information on the working of local By-laws, with a view to approaching the Local Government Board in order to obtain a unification of the Birmingham building By-laws; a reform which must be much needed if, as we understand, a set of plans may be deposited and passed as in accordance with the By-laws in one district which would be returned as quite incompatible with the regulations of an adjoining district.

Drawings by Puvis de Chavannes.

IN 1896 M. Puvis de Chavannes exhibited in a special gallery at the Champ de Mars Salon an important collection of drawings which had served as studies for his great works. The representatives of the deceased artist have determined to distribute these drawings among different public collections. A considerable number will go to the Luxembourg, and the Municipality of Paris will receive about 200 drawings for the Municipal Museum which will be organised, after the exhibition of 1900, in the small art museum on the Champs Elysées. These drawings are studies for the decoration of the ceiling of the grand staircase and other portions of the Hôtel de Ville. The towns of Amiens, Lyons, Lille, Marseilles, Poitiers, Rouen, Toulouse, and Macon, will receive respectively the drawings which were made as studies for the pictures executed for those cities. The only condition imposed by the donors who have so liberally given these works is that they shall be exhibited without delay and preserved with care. This condition will necessitate, as far as the Paris municipality is concerned, the arrangement of a special room for them at the Galliera Museum, until the Municipal Art Gallery is ready.

The Lithograph Exhibition.

IT is a pity the exhibition of lithographs at South Kensington could not have been held in a more easily accessible place than the

rooms at the further end of the long range of machinery galleries in Exhibition-road; but the collection, when reached, is a large one, numbering about 2,250 examples, grouped according to countries in the hanging, though there is no grouping in the catalogue and no arrangement in the numbering. A good deal of the collection is of historic rather than artistic interest. It is curious to see again the fearful polished-up reproductions of portraits and popular pictures which were in the early part of the century the chief uses to which the process was put in this country, and perhaps gratifying to reflect how far we have got from that type of lithography nowadays. But the real interest of an exhibition of this kind consists in the original works; and here the French have things pretty much their own way, the highest interest of the exhibition certainly lying in the works of Charlet, Raffet and M. Fantin-Latour. The two former, the illustrators of the French people and the French army of the early decades of the century, attract by their vigorous illustration of life as well as by their handling of the material; they show how excellent a medium was lithography for free illustrative sketching of a semi-satirical, semi-pathetic character; Raffet occasionally rising almost to the sublime, as in his remarkable figure of Napoleon watching the effect of a cavalry charge, under the title "L'œil du Maître," or the draggled grenadiers marching through "beastly weather" ("Coquin de Temps"). M. Fantin-Latour is a purely ideal artist, and his imaginary and symbolical subjects are as charming in conception as they are free or powerful in execution. Some of the modern French artists seem to have made lithography the medium for a good many weird and repellant eccentricities of symbolic design. The Germans, old and new, for the most part keep the steady path of respectable copying of pictures. The modern English works come next to the French in variety and originality. Among other things a screen of Prout's lithograph sketches of architectural subjects should not be passed over, they are so admirably illustrative of touch in lithography, in the treatment of this class of subject; Mr. Whistler's scribbly suggestions are very weak things beside these.

Mr. Finn's Exhibition.

THE card sent to us for the exhibition of works by Mr. Herbert J. Finn, at the Modern Gallery, 175, Bond-street, conveyed the impression that we were to see certain architectural pictures of two or three of our cathedrals — Winchester, Canterbury, and St. David's. The exhibition however is a miscellaneous one, and on the whole the landscape subjects are the best part of it. Some of these, such as "Incoming Tide, Barmouth" (2); "Harlech Sands" (10)—a very powerful effect; "Dawn" (42), a picture of lazy craft showing rather faintly in the misty morning light; "Harlech Castle from St. Davids' Golf Links" (46); "A Kentish Landscape, Evening" (45), are admirable landscape studies. The architectural subjects are numerous but for the most part treated in rather an uncertain and indefinite manner in regard to colour, surface effect, and detail, and do not rank very high as illustrations of architecture, even in a pictorial sense. For instance, in the south-west view of Canterbury, No. 61, there is little difference in appearance and texture between the masonry of the south aisle and that of the central tower, whereas in reality they stand out in marked contrast, the south aisle having been mostly refaced in a recent period (and being rather poor work at the best), while the central tower has the rugged surface of a weatherbeaten and unrestored monument. But there are two notable exceptions to this general weakness of the architectural work, viz., the view of the north transept with the central tower and cloisters, No. 58, where the rounded surfaces and grey tone of the mouldering cloister architecture in the foreground are powerfully contrasted with the more delicate and distant portions of the building; and the drawing of the same cloisters, alone and from another point of view (60), which is a really fine piece of work in a broad and vigorous style—so much so that one rather wonders that an artist who could paint architecture in this way should have been content with the rather tame treatment of it that his other works of this class exhibit.

Exhibition of M. Falguière's Works.

AN interesting exhibition of works by M. Falguière has just been opened in the large foyer of the "Nouveau Cirque," Rue St. Honoré, Paris. It is, it is true, only an exhibition of studies, and the general public, who are accustomed to this artist's highly finished sculpture, may find them a little too rough for its taste. But for artists the exhibition presents the greatest interest, showing as it does the first thoughts and ideas of the sculptor hastily translated into form in the first impulse of inspiration. Among the number may be mentioned a sketch for a monument of the French Revolution, another for a monument to Daudet, a fine bust of Gambetta, the sketch for the design for a crowning group for the Arc de l'Etoile, and lastly the sketch for the statue of Balzac, which though in a very rough state, promises a much more harmonious and decorative work than the shapeless mass by M. Rodin.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

DOCUMENTARY AND ARCHITECTURAL EVIDENCE.

A MEETING of the Royal Institute of British Architects was held on Monday at No. 9, Conduit-street, Regent-street, Mr. H. L. Florence, Vice-President, occupying the chair, when a paper on "The Comparative Value of Documentary and Architectural Evidence in Establishing the Chronology of the English Cathedrals," was read by Mr. Francis Bond, M.A., F.G.S., an Honorary Associate of the Institute.

Mr. Bond opened his subject by a reference to his own researches at Waltham Abbey Church, which had led him to the conclusion that no portion of the work was of the early date assigned to it by Professor Freeman and other authorities—viz., the eleventh century; it had nothing in common with either English or Norman work of that period. Wells Cathedral was another example of what the lecturer termed archæological aberration. Some authorities dated the nave after the west front, though the nave was far more archaic in character; Professor Willis dated the west front after the nave, but put both a whole generation too late. Many instances of similar error might be cited, pointing to some flaw in the methods of research. The cause was to be traced to the wrong estimate of the comparative value of documentary and architectural evidence. Documentary evidence consisted of the references, direct or indirect, to the history of the building in annalists, monastic chroniclers, fabric rolls, registers, wills, &c.; architectural evidence was to be sought in the stones and mortar. Discussing Professor Willis's opinion in favour of documentary evidence, the lecturer observed that few of the statements as to building operations in the cathedrals were made by contemporaries; frequently the authors lived generations or even centuries later. The ascription of the choir, transepts, and nave of Wells, as well as the west front, to Bishop Jocelin was based on a statement of Bishop Godwin, who lived in the sixteenth century, which was itself based on an anonymous MS. written in the fifteenth century. Contemporary evidence could not always be trusted. Monastic and mediæval chroniclers had likes and dislikes, and sometimes deliberately misrepresented and falsified their history—Matthew Paris's own admission was a case in point. Any good work, any fine building, erected by the unpopular, may have been attributed to the popular abbot or bishop. In this connexion the lecturer referred to Bishop Aquablanca's work at Hereford Cathedral, which had been ascribed to Bishop Swinfield, and disproved the statement of Swapham and Abbot John, monastic chroniclers of Peterborough, that Abbot Benedict built the whole nave from the central tower to the west front. The chroniclers were not architects—their language lacked precision and definiteness; and it was dangerous to build theories on their curt and nebulous statements. They were often unintentionally misleading. The lecturer referred to a possible instance in the record in Simeon's *Continuator* of Flambard's work at Durham. Again, the chronicler's statements had been applied to the wrong building—an instance at Ripon Minster was cited. There were huge gaps in the chronicles; some of the biggest works were not mentioned at all. It did not follow because there was no record of work by a particular bishop or abbot that therefore he did nothing. New evidence may be forthcoming and the prelate who had been credited with no work might turn out to have been building busily all the time. As examples of the danger of building theories on negative evidence, the lecturer showed how such theories had been upset in the cases of Wells and Worcester Cathedrals. Dates of consecration were not always of value; there were dozens of examples which had no reference to the completion of a cathedral or of any important part of it. Neither was it safe to infer that, because services commenced in a certain year, the building or any particular portion of it was completed; inferences of the kind were proved incorrect at Durham and Peterborough. The evidence, however, of contemporary fabric rolls, charter registers, &c., was of the utmost value if it could be properly read and understood. But the Latin of those documents was not easy to read; the abbreviations had proved a fertile source of error. MSS. had been carelessly copied or carelessly printed; in some cases terms had been altogether misunderstood. Striking instances of error from one or other of these causes were referred to in connexion with Lincoln, Exeter, and Hereford. Examples were further quoted showing that implicit confidence could not always be placed in mural inscriptions. Concerning architectural evidence, the comparative rather than the historical method of investigation, the lecturer considered that nowadays this class of evidence, subject to certain minor reservations, might safely be relied on. Allowance must be made for the progressive tendencies of the monks of the eleventh and twelfth centuries, for the conservatism of those of the thirteenth. The monks of Peterborough and Norwich retained their Romanesque minsters almost unaltered to the last. The canons of Lincoln, York, Lichfield, and Exeter swept away almost every trace of Norman work. The abbey church of St. Germer, near Beauvais, Oxford Cathedral, and Wimborne Minster, furnished further examples of conservatism. Builders of the first half of the fourteenth century showed reverence for old work, and refused to impair the effect of good old design; but they put their own trade-mark on the detail. Various instances were given, and some examples of "architectural forgery" referred to, as at Rochester, Durham Galilee, and notably the gateway of College Green, Bristol, and the Church of Ottery St. Mary—buildings deliberately designed in the spirit of a bygone style. The detail, however, prevents the student misinterpreting the evidence of the architecture. It was possible to be misled by the precocity and cleverness of a mediæval designer. Here and there a great original genius sprang forth, such as Suger's architect

at St. Denis, who gave the world fully developed and harmonised Gothic construction in 1140, two generations before the choir of Lincoln Minster was produced. St. Urbain, Troyes, represented the full and final consummation of Gothic architecture, which was not reached elsewhere for more than a generation. Gloucester Cathedral afforded another instance of precocious genius. In conclusion, the lecturer expressed his conviction as to the general trustworthiness of architectural evidence, and quoted in support the authority of Mr. Barr Ferree and the late Edmund Sharpe. The architectural should be studied before the documentary evidence, and if the former conflict with the latter, then the latter should go to the wall.

The Chairman said that before they discussed the lecture, he would read a letter that had been received from the Bishop of London, as follows :—"I am sorry that a previous engagement will prevent me from attending the meeting of the Institute of British Architects on November 21. I am obliged to you for sending me Mr. Bond's very interesting paper. Its main contention is that documentary evidence needs criticism in every case, and it is obvious that internal evidence supplied by architecture is one element in this criticism. The strength of this internal evidence grows by the continued application of the comparative method. It is much stronger now than it was thirty years ago. But I do not think that its results destroy the credibility of documentary evidence, but only teach us to interpret more accurately the exact meaning of the words and discriminate between an exact and an approximate statement."

Mr. W. H. St. John Hope, in proposing a vote of thanks to the lecturer, remarked that he, although not an architect, had had the temerity to write the architectural history of one cathedral and to review that of some other churches, for his own benefit and instruction. He did not go quite so far as Mr. Bond in criticising what some of their predecessors had done. Professor Willis, it must be remembered, published his *Architectural History of Canterbury*—which was distinctly a monumental work—in 1845, and at the time he wrote their knowledge of architectural detail was not so perfect as it was to-day. Moreover, in the intervening fifty years so much had their knowledge improved that they were able to stand and look over Professor Willis's shoulders. He, for instance, had had the opportunity of going through all the account rolls and registers at Canterbury, and when he told them that the series of rolls was pretty complete from 1207 to the Reformation, and that the registers covered a similar period, they would realise that there was a great deal of matter which was absolutely unknown to Professor Willis. Touching upon Mr. Bond's reference to Hereford, he remarked that it was pointed out so long ago as 1871 by Mr. Gordon Hills that the north transept of Hereford should be assigned to Bishop Aquablanca's time rather than Bishop Swinfield's ; but the old, old story still went on, like those of low side windows being for confessions or lepers, crosiers being crosses, and drains, subterranean passages uniting impossible places. When once these things got into print it was difficult to get people back to the right view. A few days ago he picked up a new book—quite a monumental work—and one of the first things he alighted upon was the description of the crosier as a cross, and a cross-legged Knight as a crusader. With regard to the wrong reference to parts of buildings, he thought they should deal charitably with their predecessors, because they had not had the advantage of dealing with cases in the light of recent investigations. Look at the case of Winchester. Professor Willis quotes an entry about the beginning and finishing of a new tower in 1200. Professor Willis could not explain the passage. He had previously made up his mind that the west front was flanked by two western towers ; but it did not occur to him that the shapes were very unusual. To him (Mr. Hope) it was clear that the entry referred to a single western tower, and no other. Mr. Bond had quoted Wharton. He was shockingly inaccurate, and there was a great need for revising him and consulting originals. In fact, unless they went to original authorities, they were liable to fall into errors. Mr. Hope quoted an instance of the importance of this. In collating a passage relating to the fourteenth century works at Rochester, he found it recorded that Bishop Hamo of Hythe went down to Battle Abbey, and on a certain day in 1332 dedicated seven altars. On turning to Wharton, he found that he recorded only one item in 1332 :—"Many other things followed which were done by the Bishop this year, too little worthy to be noticed." It so happened that there were three crypts at Battle Abbey, and if they examined them they would find them undoubtedly of the fourteenth century, and as they contained altars it was reasonable to assume that in the new work of the church above and in the crypt there were seven altars. This record showed that the church had been lengthened eastward, and that the site of the high altar, which marked the spot where Harold fell in 1066, must be looked for further west. Touching upon architectural forgeries, the speaker remarked that there was one interesting point in connexion with the north-west angle of the Westminster Abbey cloister, where in the fifteenth century a thirteenth century capital had been worked out of the same block and at the same time as the fifteenth century one. In this connexion, too, they must look out for the re-use of old material. He came across an interesting instance at the little Church of Catterick, near Richmond, Yorkshire, where an older window was inserted which certainly could not have been built at the time the work was undertaken. He read through the contract, and nothing appeared in it relating to the old window. It was plain, therefore, that the builder had saved the window from the old demolished church, and reused it to save money. He would like to ask them whether the time had not arrived when they should have a new Rickman, and a complete revision of the architectural history of all our great churches ? He had already material for some—for instance, Canterbury—and others were no doubt possessed of ample material relating to other churches. Durham could be thoroughly rewritten, for it was only recently that the whole account of the rolls, hitherto inaccessible, had been gone through at the instance of the Surtees Society. Three points should be borne in mind in preparing the stories of these great buildings. First, the Mediæval mode of rebuilding ; secondly, the lengthening of churches for shrines and lady chapels ; and, thirdly, the curtailment of building work owing to the Black Death in 1349.

Mr. Wm. White seconded the proposal. He remarked that the reasons that Mr. Bond had given for relying on architectural evidence were very weighty. In all the difficulties which had occurred, he (the speaker) often found that the antiquarians would depend not only upon documentary evidence, whatever it might be, but they rather set aside and spurned architectural evidence altogether. There were so few, comparatively, of antiquarians who had enough knowledge of architecture to draw deductions which should be drawn from architectural evidences. He would strongly press, as the lecturer had, the value of chronological and constructional evidence. There was one remarkable instance in respect to the Galilee at Durham. Documentary and traditional evidence was to the effect that Bishop Pudsey built it as a Lady Chapel ; but architectural evidence went to show that it was built as a Court of Judicature when the King went to the Holy Wars. When the visitor came out of the nave of the Cathedral into the Galilee there was an inscription over the doors calling attention to the judgment—"the righteous judgements"—which should be passed in that place—the Galilee. He did not see how the architectural evidence in this instance, including the remains of the original Tribune, could be got over in any way, and it proved the value of Mr. Bond's plea for appealing to architectural evidence. And the very name given to it would itself indicate its purpose, an outer court—like the outer court of the Gentiles at Jerusalem—accessible to all alike, a civil and ecclesiastical court, in which the Judge could exercise his two-fold authority, Episcopal and Royal. There were several instances in which documentary evidence caused people to be misled in connexion with St. Albans. This was particularly so in connexion with the remnant of a fourteenth-century corbel table, the originality of which was repudiated by the clerk of the works, who appealed to history.

Mr. H. H. Statham joined in thanking Mr. Bond for his highly instructive paper, in regard to one or two points in which he desired to draw attention. He (the speaker) was entirely in agreement with Mr. Bond's general conclusions, only he thought they ought not to forget that, after all, it was originally from documentary evidence that we got the bases for following the history of architecture. Just imagine a man of another planet being put down before the Gothic monuments of England and told to work out their history. He would make out that round-arch Gothic came before pointed-arch ; he might arrive at the succession of the various styles ; but he would be wholly dependent upon documentary evidence for dates. He only wished to argue in favour of giving full acknowledgment to the value of documentary evidence in the first instance, though afterwards, as Mr. Bond had shown, there were cases in which architectural evidence was very much more valuable than that afforded by documents. With regard to the controversy alluded to by Mr. Bond, concerning Waltham Abbey, he had studied the available evidence in connection with the building, and had come to the conclusion that the theory that Harold built the nave was absolutely untenable. Yet there was no doubt that Harold did build a church at Waltham ; it was described in detail ; and the argument of Freeman and others was that the Normans would never have pulled it down, after it had stood so short a time, to build another on its site. But there could be no doubt that they did so, and that showed that it was not safe to argue from our ideas of what was probable or improbable in such cases.

The vote of thanks having been heartily agreed to,

Mr. Bond, in replying, remarked, in regard to the use of the Galilees, that they were undoubtedly used for half secular and half ecclesiastical purposes. As to Mr. Hope's suggestions, it was quite clear that — as, for instance, at Canterbury—the huge inrush of pilgrims was one reason for enlargement.

The meeting then terminated.

The next meeting will be held on December 5, when Mr. R. W. Gibson, of New York, will read a paper on "Fireproof Construction in America."

NORTHERN ARCHITECTURAL ASSOCIATION :

PRESIDENT'S ADDRESS.*

SINCE I last had the honour of addressing you (which seems but yesterday) there has appeared in one of our professional journals an illustrated article on the architecture of this city. In my address last year, I took the opportunity (it being the Diamond Jubilee year) to describe some of the buildings, and the progress of architecture in Newcastle during her Majesty's reign, and I then ventured to assert, that the architecture of this city was of as high a quality as will be found in any city in England (excluding, of course, London, which will compare with no place, or rather no place can compare with it). It was with some feelings of satisfaction, after reading the criticisms in the journal before referred to, that I found them so much in accord with my own. I should like here to pay, on behalf of our present and past members, a graceful tribute to the said journal, for its fair and unbiassed criticisms on the architecture of Newcastle. There was one part in this criticism which was not very palatable—that referring to the domestic architecture ; but I think we must admit it, with some exceptions. There is, however, one consolation, that it is possibly as good as that in many other cities.

It is astonishing what a very small percentage of domestic buildings are the work of architects. Those of our friends who reside in detached residences, and who do employ architects, are generally men of simple or quiet tastes, who allow little latitude or scope for design. They generally are possessed of a cherished ideal, a house after their own hearts, often one like a square box, with hipped roofs. This tendency on the part of some of our friends towards this modest display is perhaps better so than the other way. It may be called a national characteristic. But however plain or simple our friends desire that a house should be designed, or whatever cranks they may have in their heads either as to the plan or exterior effect, it is our duty as architects to place before them

* Inaugural address delivered by the President, Mr. Frank W. Rich, at a general meeting of the Association on the 16th inst.

the correct course to be followed, and whether the house be simple or elaborate the design should be right, and the plan a model of usefulness.

The journal says the architects of Newcastle must look to their laurels in this respect. We have done fairly well in other walks of architecture, but in this we are not up to the mark. We have the consolation, as I said before, of being perhaps as good as our neighbours, but that is not sufficient. The criticism may be a fair one, and the stigma must be wiped out. The British public always grumble at the cost of works, whether public or private, but if any really fine design be placed before them, they are quick to recognise its merits (except members of a Government, or indeed of any elective body), and rightly applaud its author, and will gladly face the extra cost rather than a poor design.

Our students have done some work during the past session, but one cannot help feeling, that there is with *our* students as with those in nearly every other similar Association, a certain lack of enthusiasm. This is a matter to make us all think seriously, whether the plan we follow is a good plan. The whole of our effort in teaching our younger students at present is voluntary, and however excellent in theory a voluntary system may be, yet there is no shutting our eyes to the fact that the results are not satisfactory, and the reason is not far to seek. The task of teaching should, and no doubt does, devolve upon the men of most experience and of greatest merit, but these men are generally those engaged in active practice, whose every moment is bespoken, rendering it impossible they can do any justice to voluntary teaching. After all, it very much resolves itself into a money question; that is, the teachers of our students, or demonstrators, or whatever we may term them, should be remunerated to make it worth their while, as in other professions; and the cost involved in this remuneration should be paid by the recipients of the knowledge; and what is more important, the teachers should be architects in active practice; the information must not be taught by professional crammers.

Architecture is a living art, there are no dry bones about it; the practice of architecture carries with it the implication that any person practising it must necessarily be quite to the front in all the endless wants and details of our busy lives, taking advantage of and working into use the innumerable facts that science is for ever disclosing; and, last but not least, must possess an enthusiastic and thorough knowledge of what we may safely call our "Old Masters" and their works, the men who have laid down the foundation of our art from that Egypt of which we have lately heard so much, down through all the centuries to our own time, building up in stone and in literature a colossal and a glorious art, one which it is incumbent on us to hand down unsullied, and bettered if we can, to future generations.

It is on considerations of this nature that the littleness of our teaching becomes apparent, and the need of a better system being inaugurated. The system of pupilage (as in the apprenticeship system in the building trades) has undergone great changes in our lifetime; our younger students have, however, all the greater need for information. It is a well-known fact that one man in every ten would not hesitate to attempt to teach architecture, so much is it the custom of every man to consider architecture an a art with which he is quite conversant, and therefore to attack it gaily with a light heart. He lives in a house, or has business premises, and therefore knows all about it; but take my word for it, there is no one who knows so much of architecture as your architect. He spends his life in the study and performance of it, he is in touch with the innumerable wants of the times, and conversant with the record of past centuries, to which I have before alluded. It is to such men that I would hand over our younger students. The manner in which this is to be done is the crux of the whole subject. The voluntary system has been tried, and with no particular success; there, then, only remains the other, accompanied by the financial consideration.

Our Council have given this matter some attention, and know that in this city there exists an institution, the Durham College of Science, where very many subjects of a technical nature, and in touch with architecture, can be studied; and a scheme for amalgamation with the college in regard to these subjects is at present under consideration by our Council. But after the study and mastery of technical subjects, there remains that immense field of true architecture, embracing the absolutely useful in every day life, and the absolutely immeasurable field of imagination, or what is more generally termed the fine art of design, a quality beyond the range of examinations. I think we may leave the matter for the present with our Council, who will safeguard our younger friends, and trust that the scheme of amalgamation with the college, and also with the Institute (who, I believe, have a plan in embryo to work in conjunction with allied societies, not possibly so much in technical subjects as with the literature and history of architecture), will have the effect of putting our students upon a sound footing. But all this points distinctly to some greater scheme looming in the future—a future, I imagine, not far distant.

I should now like to refer to one or two subjects relating to our general practice. I believe we all find—and every day accentuates the position—that the inspection of our works becomes more onerous, owing to circumstances we need not stop to examine here, and the employment of clerks of works has become a necessity to meet the varying changes of practice. But the admittance of a clerk of the works is not always a blessing, and frequently brings uncalled for responsibilities upon us, who have already many to bear. The uprising of so many local and money-spending authorities, who so frequently appoint their own clerk of the works, calls for some decided course of action from our side. Men appointed in this way are frequently so appointed on political or other questionable grounds, working very often in a spirit antagonistic to the architect, rendering his position well-nigh untenable. We all know, from long experience, that our best designed schemes may be absolutely wrecked in the performance by the carelessness or ignorance of an inspector. There is no need why any more responsibility should be put upon members of our profession by the faults of others. Therefore, the clear course is apparent; that is, the architect must appoint the clerk of works as recommended by the Institute, selecting a man who from his own knowledge is fully qualified to superintend the work. I think it prudent that the clerk of works should in the first instance be paid by the architect, who in due course is repaid by his client. I have never known a work suffer when worked on this system, but have known deplorable results follow the other course.

It will, I have no doubt, be well within the knowledge of members that there is a greatly increased vigilance on the part of the City Engineer in respect of the deposit of plans and the carrying out of buildings. No fault can be found with the City Engineer for his efforts to obtain accuracy; it is a quality much wanted, but this, like many other things, goes to make work more costly. Where we do really find a fault is in the Town Improvement Committee taking such an extended time in approving or disapproving plans. I wish here to make a strong protest, on behalf, not only of our members, but of the public generally, against the long interval of time that is lost in the Committee meeting for the consideration of plans at intervals of fourteen days, causing, in many cases, considerable financial loss to owners of property, and would respectfully ask the Committee to fall in more with the wants of the times, and place their meetings at lesser intervals. I remember some years ago, when I happened to act as your secretary, the same question arose, and information was obtained from all the chief cities of England and Scotland, as to the usual practice in these matters, when it transpired that in many of the larger cities there were much greater facilities for dealing punctually with deposited plans than appear to exist in Newcastle. This was communicated to our town improvement committee, but no good resulted. Let us hope they will no longer stand in the way of public business, but take a more enlightened view of the situation. There is not time in the present rush of business to wait a fortnight for a decision as to whether a plan is approved or is not approved. The public want their work done quickly, and in some instances, where alterations occur in the progress of building, to wait a fortnight frequently means stopping the work altogether for that period, to the manifest loss of the owner.

There is a general feeling that we are becoming very much over-governed in municipal matters; powers are now being sought which will still further interfere with the liberty of the public in building, the strangest part of it being that the public have never asked particularly to have their liberty curtailed in this way; but there is no doubt nine-tenths of these new powers are "fads" emanating from the mind of some of our City Councillors, and generally for notoriety or elective purposes. This may be plain language, but speaking for architecture we shall find presently serious obstacles placed in the way of free design, and the architecture of our streets reduced by these by-laws to a "ditch-water" level. It goes without saying that the picturesque quality of our streets depends entirely on diversity in design—upon one building differing from the other in height, width, disposition of eaves or gables, projections or recesses, or the like. Some there may be found who advocate a design in street architecture of the "Gower-street" type, but let us hope they are few; or, to fly at higher game, some of the streets of Paris, of the Baron Haussmann period, which although more grandiose than the former, are equally unsatisfactory in their final effect. The quality of street architecture marks the history of the times, and records the sentiments of the people. We all know the circumstances under which the Haussmann buildings were erected, and we all know scores of cities where other circumstances existed, where a free people have given free scope to their qualities in design, imprinting upon their buildings a strong individuality, rendering their cities interesting at every turn we take. I should be the last to advocate the abolition of by-laws for the regulation of some building matters, but let these matters be confined to health measures and the like; let us have liberty in design. One is tempted into making these remarks by a suggestion emanating lately from our Town Improvement Committee, and there is the draft for a further bill now lying at the Town Hall, which should have the careful attention of every citizen.

While on building matters, we may say a word or two on a special kind of building very much talked of nowadays, and much needed, one popularly called a "fireproof" building; but, as a fireproof building has never yet been built, it is more correct to say a "fire-resisting" building, precisely in the same way as iron or steel safes have changed their names of late. I do not purpose here to read an essay on fire-resisting buildings, but merely to call attention to their increasing importance. This is a class of building needing all the skill of skilful men to devise, needing all our powers of observation and investigation to enable us to keep in touch with the times; it is what may be called the "modern building." Business, as we all know, moves quicker year by year, and the hazards increase. To have a large and valuable building, filled with equally valuable stock, burned down about our heads, is too serious an interference with business to be lightly endured. There is often too much theory in the design of fire resisting buildings. Fire is a terrible master; but in it Nature will have her way. It is, therefore, no use romancing in matters of construction. It is now pretty well agreed that all important or business premises, especially those abutting on public thoroughfares, should be reasonably fire-resisting, yet we frequently find them supported on the ground floor entirely on cast-iron columns or steel stancheons. The effect of this, in the event of a fire, is for the whole building to collapse like a pack of cards. It may be said architects are to blame for this, but it is not so. From what I know of architects, I do not think there is one who, in designing a building, would, on his own intuitive knowledge of design, ever produce a building standing apparently on plate glass. This iron and plate glass is one of the signs of the times, one of the phases in the history of architecture of the nineteenth century. The busy City man, in his instructions to his architect, insists on having "All Window," and he has to have it. Therefore, that material which will bear the greatest load on the smallest section must be used for supports, and for the rest glass, for which there is no substitute. But unfortunately, both these substances are dangerous under fire. Here, however, is where the skill of the architect must come in, and here we must rely on our actual experience in fires, noting the effect on building materials, and on well-conducted and authentic

experiments. I think further, that at this time it is peculiarly opportune to refer to fire-resisting buildings, for our methods of construction are altering every day, and if they are so altering they may as well alter in the direction of safety. Science has yet a large field before it; there are already many materials in the market of which we can take advantage in constructing fire-resisting buildings, but more efficacious ones are needed.

Every one who has noted the great change that has come over building material during the last twenty-five years, and over the wants of the general public, cannot, I believe, help coming to the conclusion that, sooner or later, some of our well-known and much-used materials, such, for instance, as wood and common lime plastering. will become more scarce, and may to a great extent drop out altogether. Already other materials are taking their place. Wood has two great faults (though I am bound to say it has many virtues): it is highly inflammable, and it is highly susceptible to wet and heat. Schemes have been tried with a view to render wood less inflammable, but before we can consider our buildings fire-resisting, much more must be done in that direction—that is to say if wood is used. I alluded earlier in this address to the "rush of business," and it is here where wood fails us. Our clients will not wait; they must have their buildings finished quickly, and expect them to be quite dry in no time, forgetting that the materials of which they are built are largely mixed with water. If we were like the ship-builders, we could rivet iron plates together, and there you are finished, and as dry as ever it will be; but we have not quite come to that. The wood fittings are fixed while the building is reeking with moisture, and when, having had time to imbibe a quantity of this moisture, which expands the fibres of the wood, the heating apparatus is then lighted up, and the woodwork shrinks often to a wreck. It is quite clear that, under these circumstances, neither of these materials (wood and lime plaster) meet the demands of ordinary practice: wood, on account of its inflammable nature and instability; and lime plaster on account of its wetness and slow setting. There are, as we know, many excellent quick-setting plasters in the market, but then we frequently lay this on to wooden laths, which in their turn are upheld by wooden framing. In case of a conflagration all this ends in disastrous results; indeed, we may go further, and say a great many of the usual modes of construction are wrong, for do we not imbed floor, roof, and other timbers in the walls, where they rot, and do we not form cavities between floors and ceilings, hollow partitions, skirtings, &c., which form excellent channels for fire. Much of this can be avoided by using a more solid form of construction, but this means more cost; it is the difference between good work and jerry work, and the public after all have it very much in their own hands to decide. I think all buildings should be built reasonably fire-resisting, especially public buildings, business premises, and country mansions. There seems to have never been a public building so reasonably fire-resisting as the Colosseum of Rome, and although such a building is unlikely to be built in this age, yet its lessons should not be lost upon us. A building of to-day would be more composite in its materials, but take my word for it, simplicity in materials, as in details, is often the secret of good design. It is distressing in the extreme to hear of public buildings being destroyed by fire, probably with some loss of human life, of immense places of business reduced to a heap of ashes, dislocating trade, and throwing scores of people out of work at a moment's notice; of some old ancestral mansion engulfed in the same fury, destroying, in its irresistible force, not only the building, but at the same time, priceless works of art that are lost for ever.

It is time, therefore, that more attention were given to fire-resisting buildings, even in a small way; and if wood is still to be used, it must be rendered entirely non-inflammable, in such a manner as not much to increase its market value or render it unworkable on the bench; or, if wood cannot be so treated, then some other material is wanted to fill up the missing link—some material that will be easily worked into all the varied uses to which we now put wood; such as our doors, windows, staircases, and innumerable other things. It must not only be non-inflammable, but must be of such a nature as will admit of its being worked into all the uses I have indicated, and also of being adaptable to all the alterations that occur in ordinary life; such as the alteration of buildings, or even the alteration of a door, or a window, or making a new way through a partition, &c. Wood lends itself easily to all these alterations. It is owing to this very word "alterations" that so many schemes now in the market for fire-resisting purposes fail; but that fatal word "alterations" must be reckoned with, for although the quality of being fire-resisting is a most important question, yet it must go hand in hand with ordinary usefulness, for buildings change owners, and often uses, and alterations become inevitable.

The new material, if indeed we are to have one, must have a further quality, beyond being fire-resisting, it must be proof against all influences as to wetness or dryness; it must not shrink when the fires are lighted, or swell in a damp building; for, as I have said before, men will not wait nowadays for natural materials to season. How different all this is from the time in which they took to erect the mansions of the time of Elizabeth or James, Burghley, Montacute, Crewe, Audley End, Burton Agnes, and many others, in which twenty years were frequently spent in the erection and completion of these houses; but then look at the glorious results. If wood ever ceases to be one of our prime materials in building construction, it will be with a great twinge of regret that we shall part company with it, for has it not been associated with us since time was; have we not fashioned our dear, old British oak into all the uses of our lives, do we not look with pardonable pride on its sympathetic grain, as it encases our cosy panelled rooms, and think of its great traditions immutably bound up with some of the most glorious events in our national history? I do believe, fire-resising considerations notwithstanding, that the oak will never leave us.

There is another circumstance in our practice I must refer to; I allude to the testing of materials. The scope for this subject is endless, as all experimenters know. It is too vast a subject to be undertaken by a private individual, and no Government will undertake it. We have not the advantages that our friends the civil engineers possess in frequently having the wealth of a huge company behind their backs to conduct experiments without limit. No, our works are not of such a colossal size as our friends', and will not justify such an expenditure. How, then, can this thorough, far-reaching, and absolutely authentic series of experiments be carried into execution.

There are, and have been, men who have devoted much expense and time to these matters, and to whom we are much indebted, but the information is frequently fragmentary, and not easy to reach. There has been no thorough series of experiments for architects on materials in purely architectural construction. The Institute have very lately carried out some experiments as to the strength of brickwork, &c., which are most valuable, but I do not think the expense of the system I am now foreshadowing should fall on only a part of the members of our profession; I think a much greater grasp should be taken of the situation. All our building materials as used in the ordinary building manner should be subjected to exhaustive tests of every kind, not only with regard to strength, or endurance, but also to that "fire resistance," to which I have before alluded. I do not mean that every piece of brick, stone, concrete, wood or iron should be tested, but sufficient experiments should be carried out to establish reliable data. All this would be a matter of hard facts, there would be no question of design or other debatable ground, to interfere with the steady carrying out of this scheme. After we are in possession of the mass of facts such a scheme would bring out, we could, from the knowledge then acquired, design accordingly; and who can tell what school of design or style of architecture this would produce?

But, as I said before, all this will cost money, and it will be a continuing expenditure. I am not going to say who is going to move first in this matter, or to say how it is to be brought about; I shall leave that to the collective wisdom of the members of our profession; all I would suggest is, that in such a scheme the control should be in the hands of the Institute, and all members of the profession, whether members of the Institute or not—all members worth the name—should contribute, in annual subscriptions, such a sum, as to make it worth while for the best men to give us the benefit of their services.

GLASGOW SCHOOL OF ART.

A COURSE of six lectures on "The Architecture of the Renaissance in France" was commenced, on the 7th inst., by Mr. W. J. Anderson, A.R.I.B.A., at the Glasgow School of Art. The art of the Renaissance, he said, was the art of a period which we were leaving behind, being in a state of transition, but as distinguished from antiquity and the Middle Age, it might be regarded as the work of our contemporaries, from whom it was natural to suppose we should learn most.

Speaking, in introduction, of the Renaissance as a whole, the lecturer said that it was part of the course which the Roman Empire of the West had to trace—a partial concession to antiquity, an attempted reconciliation of the ancient standards with the Christian. That this was necessary was due to the depraved state of the Mediæval Christian faith, and the movement, in its complementary tendencies of Humanist and Protestant, was an entirely beneficent one. It was a European awakening, not merely an Italian one; yet never far from the old Roman foundations were its monuments to be found. In these monuments one got nearest to the spirit of the past, which it was impossible to recreate perfectly; and, properly understood, they constituted the only documents necessary for the interpretation of the broader movements, and even much of the detail of the history of the era. By illustrations of the Château Pierrefonds, Gaillon, Azay-le-Rideau, &c., the students were enabled to follow the unfolding of the charming château style out of the defensive machine of the feudal castle. The development of the town house of the nobles, brought about by similar causes, such as the greater security of the country, was treated, and the variations which the change in the conditions, and especially the larger field open to the designer, induced in the details. For with the consolidation of the kingly power in France, the architect, too, comes into his inheritance. On the part of the workmen, co-operation with the master craftsman in the making of a perfect whole is the ideal now substituted for the mediæval one of rivalry with one another in the details of a subordinate part.

In conclusion, Mr. Anderson said that in these studies the aim was not artistic reproduction, or the opening up of new opportunities of imitation; but that they might better understand such developments, and have their ideals raised to a loftier plane, especially that the lesson might be learned that architectural growth comes of the artist's acceptance of new conditions of life, of the new purposes which architecture is privileged to serve. The subject was in this lecture brought down to the end of "The Transition" (1475-1515), which is followed by the "François Premier" period.

The second lecture was delivered on the 21st inst. The first part was given up to the Transition style in church work, which persisted through the reign of Francis I. (1515-1547). In the case both of the fortified castle and the mediæval church, the architectural form outlived the age which it properly represented, but the structural change which had already begun to penetrate the chrysalis of the feudal castle did not reveal itself in the Gothic church during the Early Renaissance period. The conservatism which has always surrounded religious forms preserved the mediæval fabric and handed it over intact to a later time. The changes in this reign were consequently limited to the decorative envelope, and were illustrated by a series of examples, among which were Tours Cathedral; St. Jacques, Dieppe; St. Pierre, Caen; Rambercourt; and St. Eustache, Paris. Taking up afterwards the château style at the point where it was handed over by the artists of Louis XII., the north wing of Queen Claude at the Château of Blois was just noticed. The unrivalled staircase, which, in its exceeding refinement, holds a place among the traditional French staircases, like that of the Parthenon among Doric temples, was very fully illustrated. Other buildings of the period described were the kindred and contemporary Château of Chanonceaux, the sculptured house of Moret, of which a fragment has been reconstructed at Paris, and the vast, weird, and fantastic Chambord. This château, which retains the great round towers and other characteristics of the type handed down from the feudal age, is one of the last survivals of the causes which called them into being, and testifies by its situation and by certain details of arrangement to peace-

ful uses. The architectural cycle which began with the donjon towers is complete with the cone-capped cylinders of Chambord, which fall to be replaced by the more convenient pyramidal pavilions of Orleanais and the Château Madrid.

GODALMING MUNICIPAL BUILDINGS COMPETITION.

WE have received a copy of the following letter which has been addressed to the Mayor and Corporation of Godalming by five competitors in the recent competition :—

"BOROUGH OF GODALMING: MUNICIPAL BUILDINGS COMPETITION.

To the Worshipful the Mayor and Corporation of the Borough of Godalming.

GENTLEMEN,—We, the undersigned, having submitted designs for the above-named competition, and having received copies of the assessors' report and information as to the design selected by the Town Council, respectfully beg to call your attention to the following facts in relation thereto :

No. 1. A schedule of instructions was issued on behalf of the Council to each competitor, setting forth the conditions under which the designs were to be prepared.

No. 2. The most important and absolute of these conditions was the following, viz. :

'A passage is required along the south side of the public hall, as indicated on the block plan, to be 10 ft. wide if the engine-house be placed at the back, and if otherwise, 6 ft. wide. The plan accompanying this condition shows the 10-ft. way required, and the exact position of it, by a coloured strip.'

There was also a question upon the point addressed to the Council and numbered 9 in schedule, as follows :—

'If fire engine is placed on back part of site, may not the 15-ft. road to the "Buries" roadway be used as access for engine to public road, instead of the passage through centre of site as suggested?'

The answer given was as follows :—

'The 10 ft. passage into Bridge-street is regarded as essential if the fire engine-house is placed on the back of site.'

With reference to the above point we consider that nothing could be more clear than the intention of the Town Council, as expressed in the conditions and as shown upon the plan supplied by them to the competitors, neither could anything be more definite than the answer given to the question that this condition was to be regarded as essential. It made no variation possible to those who intended to carry out the instructions. We would also point out that the nature of this condition was such that it could not be regarded as of small moment, because it was of primary importance in the planning of the buildings, and completely controlled the whole disposition of the several parts of them.

Under these circumstances, it is with great surprise that we learn that the design selected and adopted by your Council violates the one condition which was stated to be essential, and also the condition which, more than any other, influenced the arrangements of the plans. We are also at a loss to understand how the assessor can have recommended for the first place a design at variance with this condition, unless he entirely overlooked the point. We may safely conclude that he must have done so, as he could not have otherwise passed over such a variation as that referred to without remark, and further stated that the designs were in accordance with the 'conditions and instructions issued.'

The plan selected does not provide a 10-ft. way on the south side of the public hall as indicated on the block plan, but this space is built over contrary to the instructions on the ground floor. It cannot be urged as an answer to this objection that the design selected provides some adequate alternative for the requirement laid down in the conditions, or that the alternative so provided is even an improvement upon what the conditions required.

We respectfully submit that in awarding the premium the only equitable course that could be followed was to disqualify any design that infringed a condition involving a radical change of plan, and make a selection from among those which most faithfully followed the conditions so clearly laid down. Under these circumstances, we regret that we feel compelled to strongly protest against the premium offered being awarded to a design (whatever its alleged merit) which is at variance with the conditions. We are fully assured that this cannot be done without great injustice to us, and in support of this view we may refer to the emphatic statement made by the Editor in the issue of the *Builder* of the 5th inst. Upon a matter of this description no higher or more impartial authority could be quoted.

We cannot think that it is the desire or intention of the Town Council of Godalming to ignore conditions which they themselves laid down, or to act otherwise than fairly and in good faith with regard to them. We therefore appeal to them with the more confidence to take such action as shall be equitable to those competitors who have carried out their instructions.

(Signed)
ARDRON & DAWSON,
8, Delahay-street, S.W.
CHARLES BELL,
3, Salters' Hall-court, E.C.
E. R. ROBSON, F.S.A.,
9, Bridge-street, Westminster, S.W.
J. WILLIAM STEVENS, A.R.I.B.A.,
21, New Bridge-street, City, E.C.
SAMUEL WELMAN
(Welman & Street),
Guildford & Godalming."

LONDON IMPROVEMENTS, SESSION 1899.

THE London County Council's Bill, to be promoted next Session in Parliament, in respect of improvements in London relates to the widening of Wandsworth-road, Lambeth, Kensington High-street, and Southampton-row, Bloomsbury, and to the new thoroughfare from Holborn to the Strand, together with other projects.

The "new central street" is planned from High Holborn, opposite Southampton-row, to the north corner of the site now occupied by the Olympic Theatre. It will be connected with the Strand at two points by a "curved street," of which the eastern end is to form a junction with the Strand, as it will be widened between St. Mary's and St. Clement Danes' churches, and the western end is to form a junction with the Strand between Catherine and Wellington streets. The plans provide further for six subsidiary streets along the line of route, to effect junctions with (1) Little Wild-street, taking the site of the Metropolitan Electric Supply Company's works (behind the west side of Lincoln's Inn-fields, near Sardinia-street); (2) with the south-west corner of Lincoln's Inn-fields, taking the site of the Strand Workhouse and Infirmary (in Bear-yard); (3) with the junction of Kemble and Great Wild streets; (4) with Clare-street (through Clare Market); (5) with Houghton-street; and (6) a new street over the site of Exeter-street (between Wellington and Catherine streets). The "curved street" will join the "central street" at the site of the Olympic Theatre, and is to have junctions with Drury-lane between Craven-buildings and Blackmoor-street, and with Catherine-street at or near the site of the Gaiety Theatre. The Strand is to be widened between Catherine-street and St. Clement Danes.

Thus it will be seen that the demolitions for the projected thoroughfare will include either the whole or the part of a great number of streets, courts, passages, and alleys, amongst them being Sardinia, Vere, Denzell, Clare, Newcastle, Wych, Holywell, Little Catherine, White Hart, Blackmoor, Stanhope, and Little Wild streets, George, Chapel, Bear, Denham, Craven, Halls, and Queen's Head yards, Portsmouth-place, Clare, and New Inn passages, Maypole-alley, Sardinia-place, Wild-court, Craven and Twyford buildings, together with New Church, Angel, Helmet, and Windsor courts, leading out of the Strand. The widening of Southampton-row will be along its east side southwards from Vernon-place and Theobald's-road, with two new streets leading into Kingsgate-street at Fisher and Eagle streets respectively, and a widening of High Holborn between Southampton-row and the premises now being erected (for Parr's Bank) at the corner of Southampton-street.

The north side of High-street, Kensington, will be set back between the corner of Church-street and a point distant about 30 yards east from the end of Palace-gardens, with a new roadway from Clarence-mews (near Church-street) to High-street at Brown's-buildings, the Vestries of Kensington and St. Margaret and St. John, Westminster, to contribute to the widening of High-street. The Council propose also to widen Wandsworth-road, Lambeth, on the south-west side, between a point about 60 yds. east from Nine Elms-lane and Bond-street, opposite the South Metropolitan Gas Company's works, and to rebuild Cat-and-Mutton Bridge across Regent's Canal, with new approaches in the parishes of Shoreditch and Hackney, the Vestries contributing, and the existing swing bridge over the London Dock Cut at Old Gravel-lane, with powers to provide for the latter work being carried out by the London and India Docks Joint Committee as may be agreed upon.

The Council seek for powers under the Bill to acquire lands for the erection of dwellings for displaced persons of the labouring and poorer classes at (*a*) Packenham and Arthur streets, including the London Improved Cab Company's premises, in St. Pancras; (*b*) on the site of, and round about, Holborn Union Workhouse, near the corner of Clerkenwell and Gray's Inn roads); and (*c*) at Palmer-street, near St. Andrew's Church, Lambeth, and at the same time to utilise for that purpose the lands, or portion of the lands, they have already acquired under their scheme in pursuance of their Clare Market Provisional Order Confirmation Act, 1897.

The Bill provides that "Lands within the Improvement areas delineated on the plans . . . . and not purchased and taken by the Council . . . . which may be increased in value by the improvement, shall be liable to have an Improvement charge placed [on them] . . . . in respect of any increased value which such lands may respectively derive from the improvement."

Former plans, "Holborn to the Strand," proposed by the Council and others are described and illustrated in the *Builder* of October 19, 1889; July 25, 1891; July 9, 1892; and October 12, 1895 (L.C.C.); April 20 and October 26, 1889 ("A. E. H."); July 13, 1892 (Mr. L. W. Leeds); July 8, 1893 (Mr. C. J. Shoppee); and August 5, 1893 (Mr. Harry Assiter): we have also illustrated Mr. C. Forster Hayward's scheme, 1882.

COMPETITIONS.

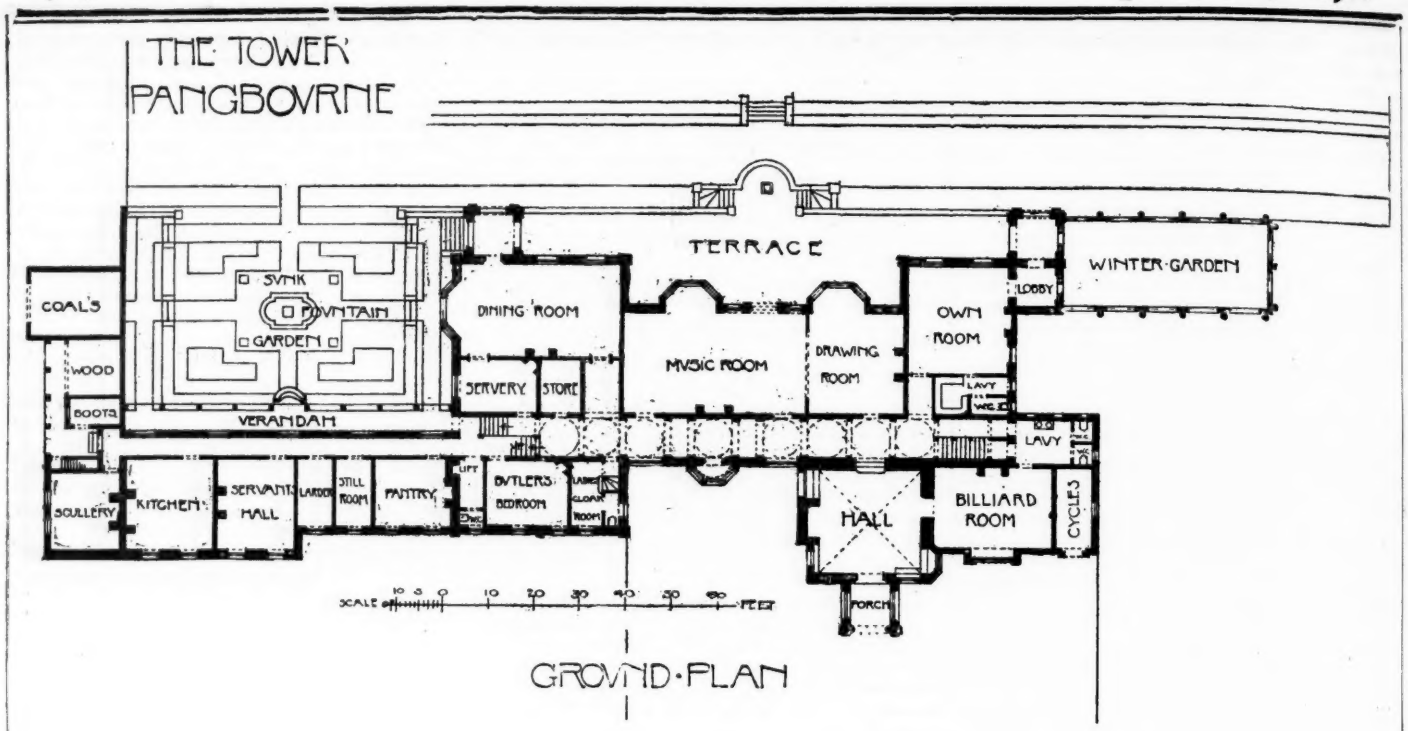
THE NEW ROYAL INSTITUTION, COLQUITT-STREET, LIVERPOOL.—The design for the new Royal Institution, Colquitt-street, submitted by Messrs. Briggs & Wolstenholme, 3, Lord-street, has been awarded the first premium of sixty guineas, and the second premium of twenty guineas has been awarded to Mr. R. W. Bedingfield, A.R.I.B.A., of 5, Hotel-street, Leicester. The designs and plans will be on exhibition at the Royal Institution, Colquitt-street, for public inspection daily from 9 a.m. to 9 p.m. (except Thursday mornings) until December 15.

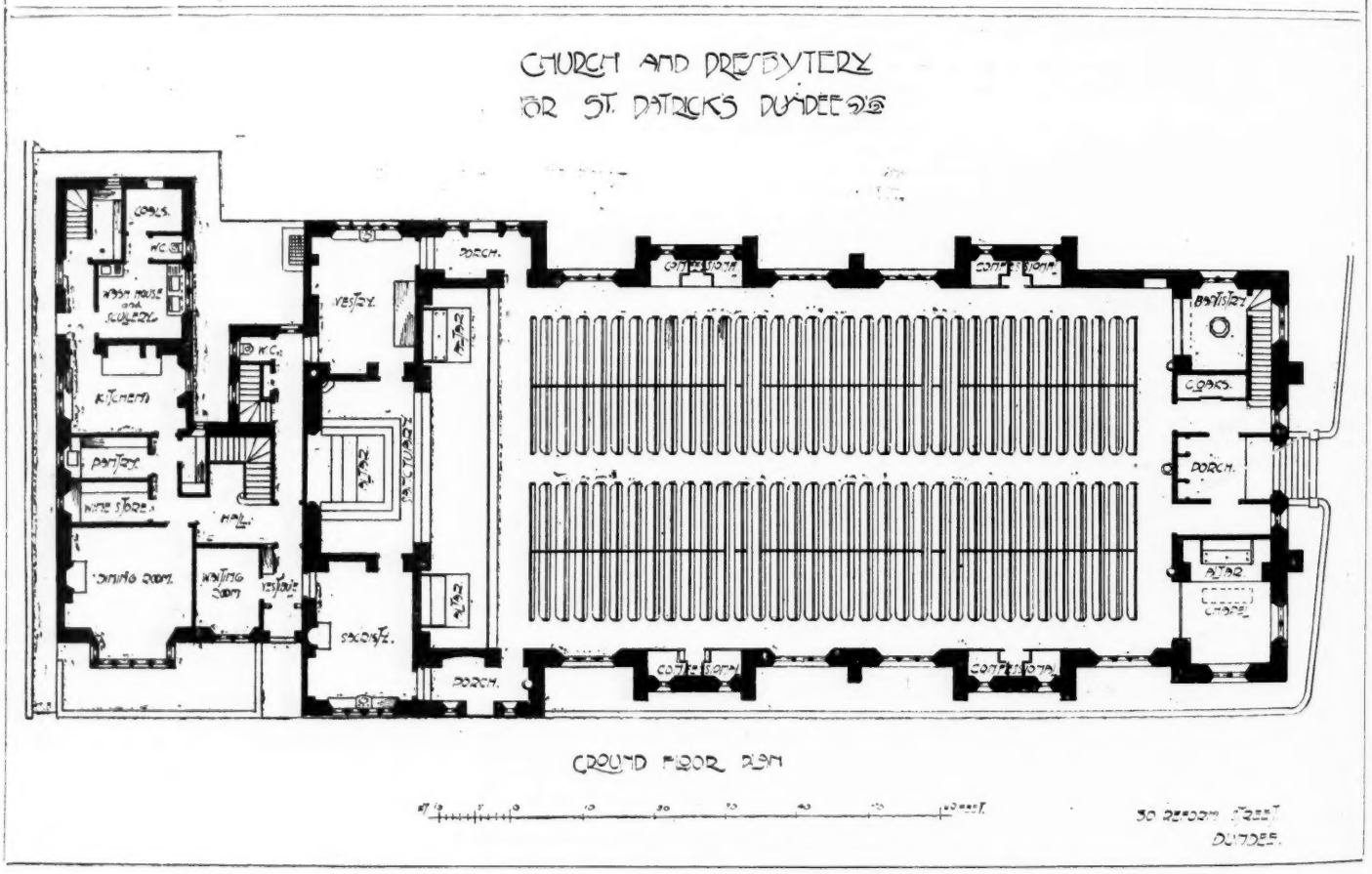
EXTENSION OF BURNLEY UNION WORKHOUSE.—In a limited competition amongst the architects having offices in the Burnley Union, six sets of plans were sent in for an extension to this workhouse. Mr. Littlewood, of the firm of Messrs. Mangnall & Littlewood, Manchester, was the assessor, and he gave the premium of 50*l.* to "Experience." On opening the letters, it was found that the author of "Experience" was Mr. Samuel Keighley, of Nicholas-street, Burnley, who will be engaged to carry out the work.

HOP MARKET HOTEL, WORCESTER.—In consequence of a street improvement decided upon by the Worcester City Council—the widening of Foregate-street—the Worcester Hop Market Hotel has to be rebuilt. In a competition among Worcester architects four sets of plans were sent in. The plans of Messrs. H. Rowe & Son have been accepted.

CHURCH, GLASS HOUGHTON, CASTLEFORD.—The design of Messrs. Demaine & Brierley, architects, of York, has been selected in an open competition for a proposed new church at Glass Houghton, in the parish of Castleford. The design is in the late Decorated style of Gothic architecture, is to be built of brick, is planned to accommodate 600 people, and is estimated to cost 6,000*l.*

GLASGOW ARCHITECTURAL CRAFTSMAN'S SOCIETY.—The fourth meeting of the above society was held on Friday, November 18, when a paper by Mr. James J. Little, sanitary inspector, was read on "Conditions which Render Houses Unhealthy." In considering his subject he first named the three essentials for a healthy life—light, air, and water; and contrasted in several ways the conditions of town and country life, noting, for example, the impure air of the town and the bad water in the country. Insufficiency of light gave increase of dirt, and lack of cleanliness caused lack of godliness. He then treated of various evils in our towns, such as the centralisation of buildings causing smoke, and from that fog, which assists the growth of bacteria by shutting out the blue sky of heaven. Building on made or on damp soil, porous stones, curtained windows, dark inside stairs, untidy offices, defective drainage, lack of ventilation and free space, were several of the innumerable conditions which caused unhealthy houses. Artistic construction, he contended, was part of sanitary construction, and the relation between the construction of a building and the health of its occupants was very marked.





Illustrations.

"THE TOWER, PANGBOURNE."

THIS house, now in course of erection, is situated on an eminence commanding one of the finest views in Berkshire. An old square "tower," built in the beginning of the century, occupied the site, and has given its name to the property. It possessed, however, no special interest, and was in a dilapidated and dangerous condition, which necessitated its removal.

The new tower, represented in the illustration of the entarnce front, is erected on its site, and will form a part of the main structure of the house. Its type is similar to that of many old Scottish towers, but the house generally favours the later developments of the Renaissance in this country.

The materials throughout are Chilmark stone and red brick facings. The roofs generally are to be covered with permanent green slates, and partly with lead flats from which the fine prospects can be enjoyed on occasion. The internal fittings and finishings are in keeping with the several parts of the building. The view of the entrance hall indicates the character of the work in the tower.

The plan, as may be seen, is symmetrical in form, but the symmetry has not been allowed to hamper the convenient arrangement of the interior. A wide corridor runs the whole length of the building, and has an oak staircase at each end. This arrangement is continued on each floor. The kitchen wing is cut off from the house, and a sunk garden closed on three sides is formed by the extension. The south or garden front is symmetrically treated, and a wide stone terrace, which the slope of the garden necessitates, is terminated at each end by an open loggia. Above these are douche baths for the first floor bedrooms.

The outbuildings, which will consist of stables, laundry, boiler and dynamo houses and shops grouped together, will be situated at a short distance from the house.

Messrs. Foster & Dicksee, of Rugby and London, are the contractors, and Mr. Rhodes is the clerk of the works.

The architect is Mr. John Belcher. The three drawings, of the tower, the interior of the hall, and the general view from the garden were all exhibited at the last Royal Academy.

R. C. CHURCH AND PRESBYTERY OF ST. PATRICK'S, DUNDEE.

THIS church, of which a plan is subjoined, consists, as will be seen, of one large nave without aisles, 104 ft. long by 50 ft. wide, with a height to the ceiling of 42 ft. On one side of the main entrance is the mortuary chapel, on the other side the baptistry, with a font designed and presented by the architect. The floor of these chapels are laid with marble mosaic. Over the entrance and chapels is the organ and choir gallery.

The church is built of coursed rubble, with red stone quoins and dressings. The roof is constructed with steel principals, and the ceiling is divided into bays by moulded ribs. The floors inside the Communion rail are laid with wood blocks, and the main floor of the church with deal boarding. The woodwork (seats, &c.) is stained a dark hue and varnished. The walls and ceilings have been finished with Duresco. The windows are filled with leaded glass in low colour tints. The heating is by

low pressure steam, with radiators at convenient points.

The contractors who have carried out the work are :—For mason's work, Mr. W. Bennet; joinery, Mr. T. C. Stokes ; plumbing, Mr. D. Brown ; plastering, Mr. Lawless ; painting, Mr. Norwell ; glazing, Messrs. Lindsay & Scott ; heating and tile work, Messrs. G. H. Nicholl & Co. ; parquetry and mosaic, Messrs. Ebner (London) ; and wrought-iron work, Mr. A. McCall.

Mr. T. Martin Cappon, of Dundee, is the architect. The perspective view of the church was exhibited at the last Royal Academy.

PROPOSED R. C. CHURCH OF ST. AUGUSTINE, NOTTINGHAM.

THIS church is shortly to be erected on a somewhat limited site in the Woodbro'-road, Nottingham. The building will be built of local bricks and Red Corsehill stone. The interior will be faced in stone.

The plan explains the general arrangement, but it may be noted that the rapid fall of the street lends itself to the provision of the necessary vestries under the chancel.

Mr. Arthur Marshall, of Nottingham, is the architect. The drawing was exhibited at the last Royal Academy.

THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

THE third meeting of the Discussion Section of the Architectural Association was held at 56, Great Marlborough-street, W., on the 18th inst.; Mr. H. J. Leaning, Chairman of the Section, in the chair.

A paper entitled "The Architects' Library" was read by Mr. Philip A. Robson, A.R.I.B.A. The author said he did not intend to read out a catalogue of books, but would treat of the architect in relation to his library. "Knowledge is of two kinds," Dr. Johnson once said, "you may know a thing yourself, or you may know where to find it ;" and to be able to do so, books are essential to the architect. While we should read the older books, we must also be conversant with new works—for if we neglect the present for the past, we throw away our best chances of success. Personally, he thought architectural books should have more illustrations than text, and instanced the way in which the plates in the professional journals were eagerly studied and criticised. We must perforce economise our reading, and this was to be found in the art of skipping and skimming judiciously, so that the substance of a book might be obtained. He thought that no man could dictate to another what he should read, it so much depended on personality ; and that our reading should converge to one point, working round it and avoiding deconcentration. It seemed to him that the first books to be acquired were those we made ourselves—sketch-books, measured work folios, photographs, rubbings, and note books ; next to these he would place books of reference—histories, dictionaries, encyclopædias, &c. ; and then books with as little letterpress in them as possible ; some of the best and most useful examples of which, he thought, were the A. A. Sketch Book, and the folios on the English Renaissance, by Gotch, Belcher, and Macartney. He was of opinion that we should not neglect to study catalogues for new books on art, and that we should make a catalogue of, and attend to our books ourselves. We should beware of damp, heat, worms, insects, and mice. Oak, teak, and cedar were the best woods to use for cases, and glass doors were essential. The cases should not be more than 7 ft. 6 in. or 8 feet high, and hot-water pipes should not be nearer than 3 ft. to the books. He thought that private libraries in this country should face south-east, and be well ventilated.

The discussion was opened by Mr. C. H. Strange, and continued by Messrs. W. B. Hopkins, H. A. Satchell, H. V. C. Smith, J. H. Pearson, and C. H. Brodie.

The chairman summed up, and a vote of thanks (proposed by Mr. Strange and seconded by Mr. Hopkins) was passed unanimously to Mr. Robson for his valuable paper, after which he briefly replied, and the meeting terminated.

The next meeting of the Discussion Section will be held at 56, Great Marlborough-street on December 2, when a paper will be read by Mr. A. E. Henderson (Owen Jones Student), entitled "Santa Sophia and Excursions into Asia Minor."

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday afternoon, at the County Hall, Spring Gardens, Mr. T. McKinnon Wood, Chairman, presiding.

Loan.—On the recommendation of the Finance Committee it was agreed to lend the Guardians of the Strand Union 6,420*l.* for additions to workhouse.

Working-Class Dwellings.—The adjourned Report of the Housing of the Working Classes Committee was proceeded with. Mr. Bruce, Chairman of the Committee, stated that a letter had been received from the East-End Dwellings Company, Limited, with regard to the Ann-street, Poplar, scheme. The letter was to the effect that as the Council had been unable to induce the Local Government Board to modify the decision conveyed in their last letter, the directors of the company had no alternative but to drop the matter. They were willing, however, to join in a deputation to the Local Government Board. He moved the following recommendation of the Committee :—"That the operation of Standing Order No. 315 (2) (*a*) be suspended in the case of the dwellings to be erected on the land comprised in the London (Ann-street, Poplar) Improvement scheme, 1893, and that the Housing of the Working Classes Committee be authorised to terminate the negotiations with the East-End Dwellings Company, and to proceed with the preparation of plans with a view to the Council itself erecting dwellings. Mr. Beachcroft supported the recommendation. On a division there were—For, 69; against, 30. The motion was therefore carried by the majority necessary under the Standing Orders.

Painting Work, Clapham-common. — The Parks and Open Spaces Committee reported as follows :—

"In the annual estimates is provided a sum of 250*l.* to cover the cost of painting work required to be done to the fencing at Clapham-common. For this sum the architect estimated that 2,011 common hurdles could be painted with three coats, and 450 more with two coats, and 740 ft. of unclimbable iron fencing with two coats. We referred the particulars and estimate to the manager of works with a view to the work being done by the Works Department, but the manager has reported his opinion that the estimate is not sufficient. The chief officer of the Parks Department is prepared to undertake the work. We recommend — That the Council do authorise the expenditure of the sum of 250*l.* for the work of painting hurdles and fencing at Clapham-common as specified by the architect; and that it be executed without the intervention of a contractor, under the superintendence of the chief officer of the Parks Department."

Mr. Hoar moved to refer the matter back. In his opinion the Parks Committee ought to contribute to the establishment charges.

Mr. Burns seconded, but the amendment was lost. The recommendation of the Committee was then agreed to.

Blackwall Tunnel.—In reply to Earl Russell, Mr. Ward, Chairman of the Bridges Committee, said there were two four-inch mains running through Blackwall Tunnel carrying water to the East London Company's mains, but provision was made in the construction of the tunnel, whereby it was possible to take much larger mains.

The Committee recommended, and it was agreed, that the Council do sanction an expenditure of 1,026*l.* for certain supplemental works required to be carried out at the Blackwall Tunnel ; that the works be carried out at the estimated cost by the Council without the intervention of a contractor, and that the drawings, specification, and bills of quantities be referred to the manager of works for that purpose.

Lines of Frontage.—The following recommendation of the Building Act Committee, the consideration of which was postponed last week, was then considered :—

"That the consent of the Council be given to the erection of bay windows and balconies in front of the new ward blocks on the south side of Marylebone-road, as shown on the plans submitted with the application of Mr. A. S. Snell on behalf of the Guardians of St. Marylebone, such consent being subject, however, to the following condition—That the bay windows and balconies be commenced within six months and completed within eighteen months from November 15, 1898 ; that the work be carried out to the satisfaction of the District Surveyor ; that the bay windows and balconies be otherwise made in entire conformity with the letter of application, and as shown on the plans accompanying it, and be not at any time, in any manner, altered or raised, or the balconies further enclosed, without the consent of the Council ; and that if such plans or application be hereafter found to be inaccurate in any particular, the consent of the Council shall be null and void."

The Earl of Meath moved to refer the matter back for further consideration, as he saw no reason why the Act of Parliament should be infringed in the manner proposed.

Mr. F. Smith seconded.

Dr. Longstaff said that he had looked carefully into the matter, and he did not think there had been such an encroachment as Earl Meath supposed.

The amendment was defeated, and the Committee's recommendation was agreed to.

The Smoke Nuisance.—The Public Control Committee reported the conviction of various persons and firms for infringing the Smoke Prevention Act.

Mr. Verney said that the result of the Council's action was very small considering the large amount of damage and annoyance which had been caused by volumes of black smoke from chimneys in crowded districts.

Lord Meath thought the Public Control Committee deserved the thanks of the Council for the action they had taken. He hoped that where the vestries in other parts of London neglected their duty the Council would institute proceedings against them.

Widening Upper Thames-street.—On the recommendation of the Improvements Committee, it was agreed that the amount of the Council's contribution to the City Corporation in respect of the widening of Upper Thames-street between Queen-street and St. Andrew's Wharf be 11,413*l.* 13s. 8d., and that the matter be referred to the Finance Committee with a view to the payment of the money, subject to the City Corporation giving an undertaking to complete the improvement by setting back the remainder of the property in front of No. 36, Upper Thames-street, at the expiration of the leases.

Gas-Engines, Lots-road Pumping Station.—On the recommendation of the Main Drainage Committee it was agreed, after a long discussion, that the tender of Messrs. Crossley Brothers, Limited, amounting to 10,744*l.* 6s. 5d., for the manufacture, delivery and erection of eight double-cylinder gas-engines at the proposed new pumping station in Lots-road, Chelsea, be accepted.

The Council adjourned soon after seven o'clock.

COURT OF COMMON COUNCIL.

ON the 17th inst., a meeting of the Court of Common Council—the first in the new Mayoralty—was held at the Guildhall.

In the course of the sitting an application by the Vestry of Hackney for the use of the Guildhall for a proposed conference of Local Authorities of the metropolis on the subject of trade obstructions and costermongers' stalls on the highways was acceded to.

A letter was read from the London County Council inviting the Corporation to appoint a representative to the conference about to assemble to determine some general scheme for the maintenance of small open spaces in London. The Corporation appointed Mr. Matthew Wallace to be their delegate on the occasion.

The Library Committee brought up a report on the recent loan exhibition of French pictures at the Guildhall. It stated that the whole of the works, some of which had been sent from America and Canada, and large numbers from France, had been returned to their respective owners without accident. The total attendance at the exhibition on eighty-seven days was 206,852, the average on week-days being 2,538, and on Sundays 1,162. The expenses had been 1,104*l.*, but the sale of catalogues had realised 610*l.*, bringing the net cost to 493*l.* The 156 pictures were insured for a quarter of a million.

The report was adopted.

Another report was brought up from the same committee on the question of having a loan exhibition of the works of Turner at the Guildhall next year, and an exhibition of paintings of the Spanish school in 1900. They recommended that the matter should be deferred for the present, pending definite inquiries, which was agreed to.

The Improvements and Finance Committee submitted an arrangement for making a new street, 40 ft. wide, connecting Crutched Friars

and Fenchurch-street, the owners of a vacant site contributing 6,000*l.* towards the cost. The arrangement was approved.

A plan was also submitted and approved for making Lothbury 50 ft. between Old Jewry and Prince's-street, at a cost of 42,000*l.*, of which the County Council would contribute one-third.

The Streets Committee brought up a report on a letter from the Metropolitan Electric Supply Company, Limited, asking for the Corporation's consent to their application to the Board of Trade for a provisional order for the supply of electricity within the City. The committee recommended that the company should be informed that the Corporation regretted that it was unable to give its consent to the application.

The report was carried.

Sir Albert Altman moved that it be referred to the Streets Committee to consider and report on the dangerous condition of Ludgate Hill Station and the necessity of more accommodation being provided for passengers, with power to communicate with the Board of Trade on the subject. He said the structure was the worst station in the world. It was built of wood, and was near being destroyed by fire the other day. The results of a fire there would be appalling. The entrances to the platforms were lamentably deficient, and people ran great risk and danger in catching their trains.

The resolution was seconded by Mr. Morton, and carried unanimously.

After other business had been transacted, the Court adjourned.

METROPOLITAN ASYLUMS BOARD:

THE BROOK HOSPITAL INQUIRY.

At the fortnightly meeting of the Metropolitan Asylums Board on Saturday, Sir Edwin Galsworthy presiding, a letter was read from the Local Government Board, enclosing a copy of the report of their Chief General Inspector, Mr. W. E. Knollys, as to the recent inquiry conducted by him into the expenditure on the Brook Hospital.

Mr. Knollys stated in his report that of the sum of 50,100*l.*, by which the cost of the work exceeded the contracts, the principal item was extra foundations, which the architect estimated would cost 5,000*l.*, but which ultimately, without the knowledge of the Hospital Committee, cost 19,144*l.* Other items of additional expenditure were brought to the notice of the managers and sanctioned by them, but an expenditure of at least 25,000*l.*—including the extra 14,000*l.* on foundations—was incurred on the architect's own responsibility, without the knowledge or consent of the Committee. The balance of 12,000*l.* included site levelling, roadways, terrazzo skirtings, heating apparatus, &c. Much of this expenditure, although very improperly incurred by the architect without due authority, was necessary, or, at least, very desirable. But some of the deviations from contract had no justification whatever, and not only increased the cost, but caused the general contractors to have to be compensated for loss of profits on the portion of the work taken from them. It appeared to him that the architect showed extraordinary audacity in venturing to incur such items of expenditure without consulting the Committee. The architect acknowledged that he had been most unwise. But there was not the slightest evidence that he acted otherwise than as he believed would improve the character of the hospital. His object was to make the institution of the best possible type, with all the newest improvements called for by medical and architectural science. He appeared to be oblivious of the fact, and much resented it being mentioned, that the amount of his own fees might be influenced by his action. The Inspector thought it a matter for serious consideration whether it was fitting that the fees should be paid on expenditure not absolutely necessary, and undertaken without the knowledge or consent of the managers.

With regard to the supervision exercised by the Committee, Mr. Knollys considered that it might well be, as urged by members, that it was impossible for them to know if the works on a large building were being carried on in compliance with the terms of the contracts. But he would have supposed they would make it their duty to see that expenditure on such matters as flooring, stoves, painting and distempering of walls, and terrazzo skirtings was not being incurred otherwise than as provided by contract. Had the Committee carried out their duties as a committee, with due regard to their responsibility, it should not have been possible for the large extra expenditure to remain quite unknown to them.

As to the managers as a whole, there was no evidence of any special supervision on their part. Sums were paid to the contractors on the architect's certificates, without reference to the Hospital Committee. While of course the managers had no option as to paying contractors, this did not prevent due inquiry as between the managers and their architect. If details of the work certified for had been required, or financial statements furnished by the architect in the earlier stages of the building, the large expenditure in excess of contracts would have been shown. The excessive expenditure on the Fountain Temporary Hospital, of which Mr. T. W. Aldwinckle was also the architect, should have made the managers feel that in the present case very careful supervision was needed.

He was glad to see that the managers had since taken steps to adopt a better system, architects being now instructed to report at once all variations in contract work, and to obtain written sanction where the cost was over 25*l.*; while on such extras the managers required a statement of all previous extras on the same contract.

In conclusion, he thought it right to mention that it was stated to him that if a site of different conformation could have been secured, the expenditure on the hospital would have been considerably reduced.

The Local Government Board in their letter concurred in the views expressed by Mr. Knollys in his report. They considered the proceedings of Mr. Aldwinckle deserving of grave reprobation, and thought that the Committee had failed in the supervision which ought to have prevented the irregularities of that gentleman. They added that when payments were made to contractors on the certificates of the architect, the managers should clearly have been furnished with information as to the work certified, and whether it was included in the contract.

The Chairman moved that the letter and report should be referred to the Works Committee. Special attention would have to be given to the questions of supervision of works in progress by Committees, and of the payment of contractors upon architects' certificates.

Mr. J. Brown (late Chairman of the Brook Hospital Committee) seconded. With regard to the charge made against the Committee of want of supervision, he ventured to suggest that there had been almost too much supervision by the Committee. For what purpose did they employ professional gentlemen selected according to the best of their judgment, and pay them an extremely liberal commission? He failed to see how any committee in the kingdom could take upon themselves the detailed supervision which was the work of the professional expert. There was great danger in a committee walking round and making casual remarks. The architect in charge might easily be led to make alterations under the belief that he had authority for them which the Committee afterwards would not approve. The less their Committees had to do with the superintendence of work under the charge of a professional adviser the better. As to payment on certificates, that was an intensely difficult subject. He never heard of a case in which the architect granting a certificate was able to define exactly the points of the work on which it was given. He believed at the close of the work they had 20,000*l.* of the contract sum in hand, and so long as the total was not closely touched they felt safe in the hands of their professional adviser. Public men would not be found to undertake such work if responsibilities of this kind were thrown upon them.

Mr. J. Brass contended that a loss of 70,000*l.* had been caused by the defective site, which was forced upon them through the refusal of the Local Government Board to approve the site at Tooting Bec.

Mr. R. Strong, L.C.C., agreed that the Local Government Board must share the responsibility. The managers would never have built on this site but for the fact that it was the first site that they could get approved for a lengthened time, although much better sites had been offered. In addition, the Local Government Board insisted on their building so far back from the roadway that they had to leave the level ground and build on a hillside, which added enormously to the cost. He did not agree with Mr. Brown that the Committee should leave the architect alone. He believed they should go round and make suggestions. If the architect was so limp and weak as to agree to everything he heard, that was his own fault. In this case t was said that the suggestions of both members and officers of the Board had been adopted without consulting the Committee in the proper way. As to payment on certificate, the inspector's dictum would make it absolutely impossible for public men to carry on their work, were the views of the Committee to override the technical knowledge of a highly-paid professional man. No builder of repute would take work if unskilled committees had a veto on the word of the architect as to payment.

Mr. Edward White, L.C.C., said this was not a scandal in the ordinary sense of the word How were the Committee to know of the orders given by the architect unless he told them? The only possible course was to have confidence in their architect, only in this case the confidence was very much abused. He was glad the Board were now building up a better system, and that instructions for architects were being adopted which would make irregularities of this kind impossible. Even these would be useless if the architect paid no attention to them. He agreed with Mr. Strong and Mr. Brown that there would be the gravest difficulty in going behind the architect's certificate, and, as to the site, no less than 53,000*l.*—practically the whole—was due to their being obliged to build on the hillside. He would recommend a new clause in every contract that no work in addition to the contract should be paid for unless the order was countersigned by the Clerk of the Board. If that were done in all cases of 25*l.* and upwards, there was no fear of unexpected extras, to the value of many thousands, in future.

Mr. Lile thought the weak point was that they had so many competing architects. It would be better if, like the School Board, the Corporation, and the County Council, they had a permanent architect to advise them.

After further discussion, the motion referring the matter to Committee was carried.

Another letter was read from the Local Government Board declining to authorise the payment to Mr. Aldwinckle of the commission on the work ordered by him without the Committee's consent, amounting to 375*l.*

Works Committee.—On the recommendation of this Committee the plans prepared by Messrs. Pennington & Son, architects, after conference with Messrs. Burstall & Monkhouse, consulting engineers, for the electric lighting of the Northern Hospital were approved.

It was resolved to apply to the Local Government Board for authority to accept the tender of the Horsfall Furnace Syndicate to erect a destructor at the North-Western Hospital for 232*l.* without public competition.

BUILDERS' BENEVOLENT INSTITUTION:

ANNUAL DINNER.

The fifty-first annual dinner of the Builders Benevolent Institution took place on the 17th inst., in Carpenters' Hall, London Wall. Mr. B. J. Greenwood (President) occupied the chair, supported by Messrs. Trollope, Colls, Mansfield, T. F. Rider, Holloway, Nightingale, Hall, Holliday, Ellis, Sherrin, Robinson, Randall, Burt, Wall, Higgs, Hill, Ritchie, C. Bussell, C. A. Bussell, J. T. Bolding, Griffiths, Lough, T. Stirling, T. Stirling, junr., Ansell, Grover, and numerous other supporters of the charity.

After the usual loyal toasts had been duly honoured, Mr. T. F. Rider, in a humorous speech, proposed "The Army, Navy, and Auxiliary Forces," Major R. A. Brutton (Secretary) responding for the Army and Navy, and Colonel Trollope, V.D., for the Auxiliary Forces.

The Chairman, in proposing "Success to the Builders' Benevolent Institution," contended that the charity was deserving of all the support they could give to it. In these days the rush of life and the fierceness of competition seemed to become greater and greater, and it was not at all surprising that some should fall behind and be left prostrate by the wayside of life. This Institution acted the part of the Samaritan, and afforded such assistance as to make life less burdensome.

Since its formation nearly 300 people had been assisted, and so far as its principle was concerned it was not capable of improvement. Some of the pensioners had at one time been in affluent circumstances, and that was an additional reason for sympathy with the aims of the Institution. It was the most skilful man who ran the greatest risk, so that no one was certain that he might not some day be in need of help. In consequence of the great age of some of the candidates, the committee had decided to elect all those who were eligible without the necessity of canvassing. He hoped the Institution would continue to prosper until the dawn of Old Age Pensions, when he supposed such charities would become things of the past. If that were so he trusted the scheme would be done on more equitable lines than in the case of the Employers' Liability Act.

The toast was drunk with enthusiasm.

Mr. J. Howard Colls next proposed "The Worshipful Company of Carpenters," who so kindly gave their hall for these annual banquets, and were at the same time good supporters of the Institution. Mr. Jacob, Warden of the Company, replied.

Mr. H. Holloway, in proposing the toast of "The President," said that Mr. Greenwood was not only a good speaker but an excellent worker. He also referred to the great loss the charity had sustained by the death of Mr. George Plucknett, who had so long acted as its Hon. Treasurer.

Mr. J. S. Holliday gave "The Architects and Surveyors." Speaking as a contractor, he might say that he had got on uncommonly well with the architects with whom he had been associated in business. The surveyors were embued with the same spirit, and their only desire was to act fairly and honourably.

Mr. George Sherrin replied for the architects. He considered they had generally to act as advocates on behalf of the contractor, as clients were not conscious of the difficulties to be overcome in carrying out work of an important nature.

Mr. Sydney Young responded for the surveyors. The quantity surveyor, he added, was a man who did a great deal of arduous work, and who applied himself to the unravelling of complicated details. One of his chief qualifications was that he should have a fair mind, and he believed that that was usually the case.

Mr. S. B. Depree proposed "The Vice-Presidents, Committee, and Stewards," to which Mr. J. T. Bolding replied.

In the course of the evening subscriptions were announced amounting to £875, of which the President's list represented £718, including £105 from the President and his firm.

ARCHITECTURAL SOCIETIES.

EDINBURGH ARCHITECTURAL ASSOCIATION.—The opening meeting of the Edinburgh Architectural Association for the session was held on the 16th inst. in the Royal Institution. Mr. Thomas Ross, the President, occupied the chair, and devoted his presidential address to the subject of "The Development of House Planning in Scotland from the Fourteenth to the Seventeenth Centuries." In the course of a few introductory remarks, it was shown that previous to the fourteenth century there was little remaining in Scotland to indicate in what kind of houses the people dwelt, the inference to be drawn being that such dwellings were of a slight and fragile kind. But from the fourteenth century onwards there was a vast body of evidence of a most interesting and instructive kind, and of an architectural value, which had not received the attention it merited. In all parts of the country there were keeps, towers, and castles, as they were differently called, which, by their fancifulness of detail, by the excellence of their masonry, and ingenuity of construction, excited our admiration, and many of them were duly appreciated by those to whom they belonged. But, on the other hand, it excited one's astonishment to see the indifference with which many a stately tower was regarded and allowed to fall into ruin. The general characteristics of a Scottish keep of the simplest kind, and the various methods adopted to enlarge such a building, were explained by plans. It was shown that the original idea was one room on each floor, so as to leave the tower open on all sides, and that any addition proceeded by way of a single-chambered tower on one side, and the same thing if required on the other side, always so placed as to leave the original tower open and free on some part of its four sides. The singular plan of Borthwick, unique in Scotland, where both the additional towers are on one side, was described. In considerable detail and with the aid of diagrams the gradual growth of the mansion-house from the keep was traced, and how the limited space of the latter, which was principally given up to the common hall, failed to satisfy the proprietors during the sixteenth and seventeenth centuries. In this connexion Elcho Castle, near Perth, was shown to be a most typical example—a connecting link between the old and the new—absolutely unaltered, and in good preservation. Melgund, in Forfarshire, was cited as another instance of such a house. It, at the same time, exhibits a curious harking back to old ideas in having a keep built at one end, so that at first sight it appears to be a building of two periods, while in reality it is all of one period. Drochil Castle, Peeblesshire, which is erroneously supposed never to have been inhabited, was shown to be a most exceptional plan for a Scottish nobleman to adopt for his house at the end of the sixteenth century. Here, perhaps, for the first time in Scotland, a complete departure was made from the old style of planning by the introduction of a central corridor, of great width, from end to end of the house, and from which rooms opened on either hand and on every floor. The country, however, was not ripe for such a sweeping change, and probably not till last century was the plan ever repeated. Maclellan's house, Kirkcudbright, and Kelly in Fife were illustrated as most interesting examples of Scottish houses of a moderate size. The remarkable ruin at Barns, near Longniddry, presented a very pointed example of the desire for a more spacious style of house than was common. Built about the same time as Drochil, but never finished, it was strongly fortified, and it had many features in its plan which brought it into touch with modern ideas. The culinary arrangements of these old buildings, as exhibited in the many curious kitchens which still remain, were fully described and illustrated with plans.

EDINBURGH ARCHITECTURAL SOCIETY.—On the 16th inst., a meeting of this Society was held, Mr. W. N. Cumming, the President, in the chair, when Mr. J. A. Morris, of Ayr, read a paper on "Architecture." Mr. Morris dealt with his subject as an art, in opposition to a profession, dwelling on the influences of our own day, which he said gave great promise for the future.

LIVERPOOL ARCHITECTURAL SOCIETY.—A party of members of the Liverpool Architectural Society, headed by Mr. W. E. Willink, President, paid a visit of inspection last Saturday to the Thompson-Yates Laboratories at University College. Professors Boyce and Sherrington met the party at the Laboratories, and conducted them through the various rooms, Dr. Hope afterwards showing them through the Hygiene Museum. The first members' meeting of the Society was held on the 21st inst. at the New Law Library, 41, Castle-street. Mr. W. E. Willink presided. A paper was read by Mr. Edmund Rathbone on "Liberalism and Conservatism in Architecture." Mr. Rathbone displayed a number of photographs depicting the various styles of architecture from the early Egyptian period up to the present time. He pointed out that up to the time of the Reformation all architectural work had been inspired by religion. In the present day, when the religions of the world had become so innumerable, men had specialised and the styles of architecture had become almost as numerous as the religions themselves, whilst their originality was oftentimes more remarkable than pleasant. What was wanted in this generation was that they should form a tradition—some such tradition as they had had in the old work. Professor Simpson moved, and Mr. F. E. P. Edwards seconded, a vote of thanks to Mr. Rathbone, which was adopted.

BOOKS RECEIVED.

"ALPHABETS: OLD AND NEW." By Lewis F. Day. (B. T. Batsford.)

NEW CHURCH, ABERDEEN.—The foundation-stone of the new Church of St. Fittick's, Walker-road, Torry, Aberdeen, has been laid by Mr. L. Mackinnon, jun. The church will cost in all about 4,500*l.*, and the architect is Mr. A. H. L. Mackinnon, Aberdeen.

ARCHÆOLOGICAL SOCIETIES.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—The second meeting of the session was held at the rooms in Sackville-street, Piccadilly, on Wednesday, the 16th inst., Dr. Winstone in the chair. Mr. Andrew Oliver exhibited the remains of a sword and a small knife, which, together with the boss of a shield, were found with three skeletons at Portslade, near Brighton, Sussex, in July last, in the formation of a new road. The skeletons faced to the east. After the removal of the antiquities the human remains were examined and carefully interred in the churchyard at Portslade. The opinion of the meeting was that the exhibits belonged to the Romano-British period. Mr. Gould exhibited another photograph of the Roman pavement at Leicester, which has already been illustrated in the Journal of the Association, and read some additional details regarding it, bringing out the interesting fact that the houses recently demolished, under which the pavement was found, occupied the site of a house once the residence of John Bunyan. A paper on Wool Church, Dorset, by Dr. Fryer, was read in the author's absence by the Rev. H. J. D. Astley, Hon. Sec. One of the principal features of this church is the chancel arch of thirteenth century date, which is perhaps unique for that period. The unusual and effective appearance of this arch is produced by the filling up of the large arch and piercing the wall with three arches of equal width, each 10 ft. 6 in. high and 3 ft. 6½ in. wide. These three sub-arches rest upon shafts of octagonal form 32 in. in circumference without capitals, and with base moulds near the floor. The tympanum is quite plain, with no trace of decoration, although it is quite likely this was originally intended. The church also possesses a font of the fifteenth century, of special interest, as it was evidently purposely designed for its present position against the westernmost pier of the north arcade of the nave. Fragments of Cresset stones have occasionally been discovered in England, but Wool Church possesses one in almost as good a condition as when it left the hand of the mediæval mason. There is a tradition that the bells of Wool Church were stolen from Bindon Abbey at the Dissolution, but this is contradicted by the bells themselves, as all of them are dated, the oldest being of the year 1606. The first portion of a paper upon the Welsh Marches, by Mr. C. H. Compton, V.P., was read by the author. In the middle of the eighth century the Saxons made many encroachments in the territory of the Welsh beyond the Severn; so the Welsh took up arms and made many successful incursions upon the Saxon territory. In order to arrest these predatory attacks of the Welsh, Offa, King of Mercia, united himself with the Saxons, with the result that the Welsh, being unable to resist these combined forces, retired to their natural strongholds among the rocks and mountains, and from thence continued their inroads against their enemy. Offa, therefore, annexed the country between the Wye and Severn and planted it with Saxons, and for additional security caused a great ditch to be made, anno 776, which was called Clawth Offa, or Offa's Dyke. In the discussion which followed the paper, Mr. Gould observed with reference to this dyke, that he had traced it throughout himself and felt able to affirm that it was never intended as a line of fortification—a misunderstanding which was very common with respect to it. It was merely intended as a boundary line between England and Wales. The Rev. H. J. W. Astley, the Chairman, and others also spoke upon the paper, which was a most interesting summary of the history of the Marches.

Correspondence.

***To the Editor of* THE BUILDER.**

ST. ANDREW'S PRESBYTERIAN CHURCH, BLACK ROCK, DUBLIN.

SIR,—In the description of this building given in your issue of the 12th inst. the names of the architects are given as *Murray & Foster* instead of *Murray & Forrester*. To avoid misunderstanding, we shall be much obliged if you will kindly correct the mistake. The names of the two firms being so much alike are sometimes misleading.

MURRAY & FORRESTER

The Student's Column.

SOUND, LIGHT, AND HEAT.—XXI.

LIGHT: REFRACTION (*continued.*)

ANOTHER practical application of refraction is furnished by the optical installations in lighthouses. Trueman Wood has given an excellent summary of the aims of the lighthouse engineer and the problems he is called upon to solve. He must obtain the most powerful penetrating light possible, and he must avail himself of every fraction of that light, not wasting any on sky or land, but sending all out to sea, and to that part of the sea where the light is most wanted. He must send it far over the water, to the utmost horizon which the lofty tower or cliff, on which the lighthouse is situated, affords him. After these conditions have been satisfied, the engineer must give each light a character of its own, so as to distinguish it from amongst its neighbours.

A great portion of the optics of the lighthouse consists in resolving that problem comprised in the phrase "not wasting any (light) on sky or land." It is evident that unless special methods are devised, a large proportion of the light would be directed landwards, and such rays have to be captured and directed to required positions, with as little loss as possible. Of course, in lighthouses of the Eddystone class the problem is somewhat different, the light having to be used all round, the greatest care being taken not to permit the upward and downward escape of rays. From what we have said in the last article concerning the treatment of light rays on passing through prisms, the student will readily understand that a convex lens placed in front of a light will collect the diverging rays falling upon it and transmit them as a parallel beam. The same result is obtained by the use of a plano-convex lens. The great practical difficulty in employing such lenses, however, is the tremendous size they would have to be to get anything like a powerful result. So Fresnel applied the polyzonal lens (invented by Buffon), and became the father of the dioptric system of lighting. This kind of lens is based on the plano-convex principle, by excavating the plane surface and cutting it into a series of prisms, so arranged as to refract a central light, or series of central lights, in beams composed of parallel rays.

The dioptric system, as described by Mr. Chance,* consists of a structure of glass zones, or segments, which in a complete apparatus envelopes the sphere of light radiating from the central flame, except that portion which is intercepted by the burner, or is occupied by its chimney. The vertical axis of the burner coincides, of course, with that of the apparatus. In reality, the upper, middle, and lower portions of the system generally have different foci. An angle of about 57 deg., which the focal horizontal plane bisects, is acted upon by refraction alone; but the rays which pass above and below this angle are deflected by internal total reflection.

The phenomenon of internal reflection is well described by Trueman Wood. When a ray of light passes obliquely into a prism its course is bent, as before explained—it is refracted; as it passes out of the prism through one of its other sides into the air it is refracted again. But suppose the angle at which the ray meets this second side to be so oblique that if it passed out without refraction it would just clear the side, the ray does not get out at all. It is reflected off from the inner surface of the glass, as if the layer of air next that surface had been a layer of quicksilver; and not only so, but the whole ray is reflected, none being absorbed, as is the case with the most perfect mirror. This power of total reflection is most valuable for lighthouse purposes.

In Fresnel's original scheme the annular form of lens was selected, for, not only did this afford a means of considerably reducing the substance of the glass, but each ring was given its own individual shape, so as to correct spherical aberration. The collective effect of this lens is that it sends forward an infinite number of conical beams, which radiate from within its substance, and whose axes are all parallel to that of the lens; so that, at a moderate distance, the aggregate effect is one conical beam, the axis of which is the lenticular one. The intensity of this collective conical beam varies in different directions, according to the corresponding parts of the flame from which the rays proceed; the maximum intensity is, of course, in the direction of the axis, from which the brilliancy gradually diminishes, until it becomes a minimum at the boundary of the beam.

The refracting belt of the fixed light is cylindrical, as described by Mr. Chance, and was formed by the revolution of the vertical central section of the annular lens round the vertical axis of the system, so that this belt was lenticular in every meridian plane; but not so in any horizontal one; and hence the central light retained its natural divergence in azimuth, and thus distributed, in every direction of the horizon, an uniform illumination.

It has been known for many years that there is a limit beyond which prismatic deflection becomes wasteful, partly by chromatic dispersion and partly from the increasing loss by reflection at the surfaces of incidence and emergence. It occurred to Fresnel to employ totally reflecting zones, but Alan Stevenson was the first to extend the application of horizontal reflecting zones to dioptric apparatus of large dimensions—at Skerryvore lighthouse in 1843.

In regard to the composition of glass used for lighthouse purposes, which is practically applicable also to prisms used for refraction generally, on the large scale, the proportion of silica varies from 72 to 78 per cent., depending on the particular kind of glass, the remainder consisting for the most part of soda from 12 to 18 per cent., and lime from 6 to 15 per cent. Alumina and oxide of iron are present only in extremely minute quantities. Occasionally a little arsenic, and rarely carbonate of potash, red lead, and manganese have been employed.

Decomposition of Light.

We have hitherto dealt with the refraction of light as though the rays emerging from the prism were of a simple character, and the original beam of sunlight merely impeded in its progress through the prism. As a fact, however, the beam is split up into several parts, so that the whole quality of the light is different to what it was at first, in other words, the light is decomposed into several kinds of light, which phenomenon is known as dispersion. A triangular prism of glass is generally employed in experiments upon this dispersion of light, and the coloured image thus dispersed is called a spectrum. The colours seen in the ribbon of the spectrum are seven, namely, red, orange, yellow, green, blue, indigo, and violet, of which the red arises from the least refrangible rays, and the violet from the most refrangible, the others having a calculable refrangibility lying between the extremes. On examining this ribbon through a telescope, it will be found that the different colours are crossed by a great number of dark lines, known as Fraunhofer's lines.

The lines are best studied by making a sunbeam pass through a spectroscope, in which several prisms are mounted in a most careful manner. A common form of this instrument is composed of three telescopes mounted on a single foot, and whose axis converge towards a prism of flint glass. One of these telescopes can be turned round the prism; this is the one employed for viewing the spectrum. One of the others is so arranged that near what would be the eye-piece a lamp is placed; the light rays passing through this telescope are projected on to the prism as parallel rays, and on leaving the prism the light is decomposed. In this condition it falls on to the objective of the first telescope, through which the observer is looking, and is seen (much magnified, of course) as an image of the spectrum. The third telescope is employed in conjunction with a micrometer for measuring the relative distances of the lines of the spectrum. The minor parts of the instrument need not be described here.

There are three chief types of spectra (1), continuous, (2) band or line, and (3) absorption. The first of these is furnished by ignited solids and liquids, and consists of a continuous band of the colours already mentioned. The second consists of a number of bright lines, passing at right angles across the darker portions of the band; these are produced by ignited gases or vapours. Absorption spectra are furnished by the sun and fixed stars, and are consequently of chief use to the astronomer. For us the spectroscope must only be regarded as an analytical instrument, and principally as an aid in chemical analysis and in the preparation of metals and alloys.

To show how the spectroscope is worked, let us take some sodium and burn it in the flame alluded to; it will be noticed on the spectrum that a bright yellow line has now made its appearance, *i.e.*, a bright line (or thin band) has been formed in the yellow part of the continuous spectrum. As often as we burn sodium this line will be seen, and always in the same position. The spectrum of lithium is a clear line in the red portion, and another in the orange, and so on. In other words, each element has characteristic lines; so that on viewing the lines in the spectrum of a body the chemical composition of which was not known, it is possible by means of the spectroscope to arrive at some idea of the elements contained in it. In this way, scientists feel confident that they now know something of the chemical constitution of the sun and certain stars—only in the case of the latter the lines are dark and not bright, due to a cause which need not here be considered.

In addition to its luminous properties, the spectrum produces calorific and chemical effects. On placing a thermometer in it, it will be found that the temperature rises as that instrument is moved from the violet towards the red end. Then, again, the comparative temperatures of incandescent bodies may be judged according as they produce much or little red (hot), or violet (colder), in their respective spectra. The violet and ultra-violet portions of a spectrum produce more energetic chemical action than the other parts.

The spectroscope has been found useful in the manufacture of pig-iron. Dealing with this application, Professors Bloxam and Huntingdon observe* that pig-iron, containing from 2 to 4 per cent. of manganese, can be worked by what is known as the direct process, when it is only desired to reduce the carbon to 0·3 or 0·4 per cent., as for rails; *i.e.*, the "blow" is continued until the carbon is reduced to the requisite amount, the manganese still remaining in (0·1 to 0·3) being sufficient to render the metal workable. This method is in use in Sweden, and parts of Germany, where suitable pig is available. It would not pay to make pig specially for the purpose by introducing manganese into the blast-furnace. The exact moment at which the "blow" should be stopped can only be judged of by means of the spectroscope and by observing the colour of the slag and forgeability of globules of metal rapidly withdrawn from the converter on the end of an iron bar.

After having been once decomposed a beam of light may not be further reduced by the same process. Thus, if we capture, say, the violet portion of the spectrum, and isolate that from the remaining portions, and then cause it to pass through another prism, the effect is merely the transmission of the violet through the glass, and it remains violet after the passage, though the violet rays are again refracted to some extent. Different portions of the spectrum are unequally refrangible, however.

Photography.

A few words, only, on this subject must suffice. We have observed that the violet and ultra-violet portions of a spectrum produce more energetic chemical action than the other parts. Chloride of silver blackens under the influence of light, especially in the violet portions. Photography has been described as the art of producing permanent images of objects by utilising the changes which certain substances undergo in the presence of light. In what is known as a collodion picture a clean glass plate is held by one of its corners while a stream of collodion holding iodide and bromide of potassium in solution is poured over the plate, and the excess allowed to drain off. Ganot, in describing the process, (Op. cit. p. 598) observes that the plate is then immersed in a bath containing 30 grains of nitrate of silver to the ounce of water. This operation must be performed in a yellow or orange light. The plate is then removed, drained, and placed in a dark slide in the camera. After exposure, no change is visible on the plate, but on pouring over it a solution of pyrogallic acid, or ferrous sulphate to which some acetic acid has been added, the image slowly appears. When all the details are visible the plate is fixed by immersion in a bath of hyposulphite of soda or cyanide of potassium. By another process the collodion is impregnated by the silver salts direct.

In gelatine or "dry" plates gelatine is em-

* Min. Proc. Inst. C.E., vol. xxvi., 1867, p. 478.

* Metals, their Properties and Treatment, 1894, p. 209.

ployed instead of collodion, as the sensitiveness of the salts of silver is greatly increased thereby. At a later period transparent celluloid was devised as a substitute for glass in dry plates, which celluloid acts as a support for the gelatine film—as in the kodak camera. Quite recently methods have been devised for permanently retaining coloured images.

The glass-plate films and gelatine films retain and form "negatives." To produce a "positive" or true picture, the negative is placed on a piece of sensitised paper; or, in the case of lantern-slides, on another film. The sensitised paper is of various kinds. In one of them, the negative with paper under it being exposed to the light for a short time, the chloride of silver on the paper becomes acted upon by the light rays in such a manner that the lights of the negatives are replaced by shades on the paper, and inversely. The picture is then immersed in a bath of gold chloride, then in a solution of hyposulphite of sodium, and finally is thoroughly washed in water.

The student of architecture knows the uses of photo-printing of plans, which saves much work in the office. When he is "on tour" the dry plate in the photographic camera is made to do duty, where, formerly, the sketch-book alone was his companion. This is to be regretted in many respects. To fix the details of a building in the student's mind there is no better way than for him to sketch them; if the camera is allowed to do the work, much of the value of the object lesson is lost.

OBITUARY.

SIR JOHN FOWLER, BART.—For some considerable time past the gradually failing health of Sir John Fowler had given cause for the greatest anxiety, yet his death, which occurred last Sunday evening at Bournemouth, where he had been staying for some months, was very sudden, his immediate friends not anticipating that the end was so near. Although Sir John had not given very great attention to engineering matters during the last few years of his life, yet he was so well known, and so universally accorded the highest place in his profession, that his death, notwithstanding his advanced age of eighty-one, comes as a personal bereavement to all engineers. For more than half a century his name has been before the public, and it is not an exaggeration to say that he was connected, in one way or another, with practically every engineering work of any magnitude that has either been proposed or executed during this period. It would be far beyond the limits of our space to even mention the names of the works with which he has been connected; but many of them are so important that a short reference to them is necessary, since upon these rests Sir John's reputation as one of the greatest engineers of recent times. It is now forty-five years since the first Act of Parliament giving permission to construct an underground railway in London was obtained. This little line—for it was only some two miles in length—from Edgware-road to King's Cross, was the commencement of our present underground railways system, with which the name of Sir John Fowler will be always associated. Immediately the work was sanctioned the plans for extensions to Paddington and to the City were prepared, and the financial support of the Great Western Railway was secured. The construction of these underground railways since those early days has so rapidly developed that a new line of this description now causes but small interest, but it should be remembered that the introduction of the system, at a time when engineering appliances were not so perfect as at present, was accompanied by difficulties which were all but unsurmountable, and it is probable that the execution of works of this nature would have been postponed for a considerable period had not an engineer of sufficient ability been found in Sir John Fowler to superintend the operations. In 1866 Sir John was elected President of the Institution of Civil Engineers, and his address before that Institution, devoted to the subject of the education of an engineer, attracted much attention, it being reprinted and distributed extensively, notably by the Government of India, to the engineers in its employment. When the Suez Canal was almost completed Sir John visited Egypt, and his work in connexion with the development of that country is well known. For nine years he made periodical visits to Egypt, and the valuable services he then rendered to her Majesty's Government were so highly appreciated that in 1885 the Queen, on the recommendation of the Marquis of Salisbury, created him a Knight Commander of the Order of St. Michael and St. George. We now come to the Forth Bridge, the best known of all the works with which Sir John Fowler has been associated. So much has already been written on this undertaking that any further description of it would be superfluous. We all know the almost insuperable difficulties that were met with during the construction of the bridge, and how they were all, one by one, overcome. Naturally, no one man could alone carry out a work of such magnitude, consequently the work of one or two other master minds is clearly discernible in what is, without doubt, the greatest engineering triumph of this century. With the completion of the Forth Bridge, the engineering career of Sir John may be said to have practically finished, and a more suitable termination it is scarcely possible to imagine. Thus closes a long and busy life, a life devoted to the conception and performance of those vast engineering works that have always done so much to materially increase the welfare of a nation.

MR. JOHN G. LIVESAY.—We regret to announce the death of Mr. John G. Livesay, A.R.I.B.A., which took place at Ventnor on the 19th ult. Mr. Livesay was the eldest son of the late Augustus F. Livesay, F.R.I.B.A., and had been an Associate of the Institute since 1882, but for twenty years before that date he had practised his profession at Ventnor. In 1884 he was appointed by the Local Board Town Surveyor, and on his resigning that office eleven years later he took the position of Consulting Engineer to the Board. During his tenure of office he inaugurated and carried out an extensive sewage system, extended the sea-walls, and undertook several other important public works. In addition to this and to the general practice of his profession, Mr. Livesay was for twenty years manager of the Ventnor Gas and Water Works, of which company he was a director. He was also surveyor to several large properties in the neighbourhood, among which are included the Steephill and Southerville Estates, in which, during the term of his agency, great developments have been made. Mr. Livesay was also a member of the following societies:—Meteorological Society (Fellow), 1860; British Association for the Advancement of Science, 1864; Institution of Civil Engineers, 1866; Association of Municipal Engineers and Surveyors, 1873; Surveyors' Institution (Fellow); Associate, Royal Institute of British Architects, 1882.

GENERAL BUILDING NEWS.

CHURCH, DUNDEE.—A new Established church is to be erected in the Clepington district, Dundee. The building will face Clepington-road and Neishfield-street, and when completed will accommodate about 800 persons. At present it is intended to erect nave and aisle to accommodate 400, with temporary vestry. The church will have a staircase and porch at the west corner and a porch at the east, the stair leading to an end gallery. Entrance to the hall and vestry will be from Neishfield-street. The plan shows nave with one aisle, transepts, and apsidal end, with open timber roof. The architects are Messrs. Johnston & Baxter, Dundee.

ALTERATIONS TO CHURCH, BULMER.—The chancel of the old parish church of Bulmer, near Castle Howard, has recently been rebuilt and embellished from the designs of Messrs. Demaine & Brierley, architects, of York. The works comprise rebuilding the south and east walls, the insertion of new decorated tracery windows, a new roof of oak covered with lead, new oak chancel seats, altar rails and table, a simple painted oak reredos, and a stained-glass window.

REOPENING OF SPORLE CHURCH, NORFOLK.—The re-opening of the parish Church of St. Mary, Sporle, which for the past eighteen months has been closed for the purpose of restoration, took place recently. The principal works have been putting new oak roofs to the nave and north chancel aisle. The roofs have been covered externally with felt and boarding. the lead has been recast and relaid, and new eaves, gutters, and rain-water pipes have been provided. The south nave arcading, with the clearstory above, and part of the north chancel wall, all of which were in an unsafe condition, have been taken down and rebuilt, and the ruined north chapel or sacristy has been reinstated; the stonework, &c., of the chancel arch has been restored, a new arch has been erected between the north aisle and the north chancel aisle; new tile and wood block floors and stone steps to nave and aisles have been provided, the nave walls internally replastered, and all distempered, including the lower stage of tower, and boarding underside of floor to ringers' stage. The total cost of the works, so far as proceeded with, is nearly 2,000*l*. Messrs. Cornish & Gaymer, of North Walsham, contractors, have executed the restoration from the designs of Mr. Herbert Green, architect and diocesan surveyor of Norwich and Lynn.

RESTORATION OF TRIMLEY ST. MARTIN CHURCH, SUFFOLK.—The restoration of this building has been completed. The old roof over the nave and chancel has been removed, and a new structure, composed of pitch pine, has been erected. In addition to this alteration a new doorway has been made directly on to the road in the west side of the tower The tower has also been restored. The work has been carried out by Mr. Thurman, of Walton, from the plans of Mr. J. S. Corder, of Ipswich.

CHURCH IMPROVEMENTS, CROPTON, YORKSHIRE.—The Moorland Church of Cropton, in the parish of Middleton, near Pickering, has recently been improved. The work consisted of reglazing the windows, fixing a painted and panelled wood ceiling to the nave, painting the seats and wall panelling, new oak altar rails, providing a new heating apparatus and chimney, and generally repairing the walls, roof, and fittings of the fabric. The work has been executed from the designs and under the supervision of Messrs. Demaine & Brierley, architects, of York, by Mr. Barnes, of Malton, and Mr. Nicholson, of Barton-le-Willows. The church was reopened by the Bishop of Beverley on the 16th inst.

FRIENDS' NEW SCHOOL, PADDOCK, YORKSHIRE.—On the 12th inst. the Society of Friends opened new school premises adjoining their meeting-house at Paddock. The new school communicates with the present meeting-house by two doorways. The assembly-room is 36 ft. long by 30 ft. in width, and a movable platform is provided at the further end. The entrance hall is 10 ft. wide, extends the full width of the school, and contains a staircase leading up to the class-rooms on the first floor. On the ground floor are a kitchen, heating apparatus room, ladies and gentlemen's lavatories, and verandah along the front of the chapel and school. Three class-rooms, secretary's room, and library are arranged on the first floor. The internal woodwork is of pitch pine, varnished; the ventilation is provided by means of inlet ventilators; the rooms are heated by hot-water pipes, on the low-pressure system, and the building throughout is lighted by electricity. The total cost amounts to 1,200*l*. The architect was Mr. J. Berry, of Huddersfield. The various works have been carried out by the following contractors:—Masons, Messrs. A. & T. Haigh, Golcar; joiners, Messrs. H. Hollingworth & Sons, Moldgreen; plumbers, Messrs. Sanderson Bros., Paddock; plasterers, Messrs. J. Robinson & Son, Marsh; painter, Mr. R. Heaton, Paddock; slater, Mr. Alfred Bower; concreter, Mr. John Cooke; heating engineer, Mr. J. W. Thornton; electrician, Mr. T. W. Broadbent.

INDUSTRIAL SCHOOL, STOCKPORT.—On the 17th inst. Mr. George Whiteley, M.P. for Stockport, opened the new Industrial School for Boys at Offerton. Mr. Briggs, of Stockport, was the contractor, and the architect was Mr. T. H. Allen.

CATHOLIC SCHOOLS, COWPEN, NORTHUMBERLAND.—The foundation stone of the new Roman Catholic school in connexion with the village mission was laid at Cowpen recently. The building, which is to be of red pressed brick with stone facings, will be erected by Messrs. Barron & Temple, contractors, Blyth, in accordance with the designs of Mr. A. A. Windle, the architect. In the principal schoolroom the seating accommodation is for 120.

ST. STEPHEN'S SCHOOLS, WESTBOURNE PARK.—The additions which finally complete these schools were opened on the 17th inst. The additions consist in carrying over the old building (erected in 1858) a new story of a similar character to that of the newer portion of the schools built in 1896-97, and of some considerable alterations of the older structure necessary for the working together of the old and new schools. In carrying up the new story, only the external walls of the old structure have been raised, forming an L-shaped boys' school room, 56 ft. by 20 ft. in the long arm, and 48 ft. by 24 ft. in the short arm of the L, by about 17 ft. to the collar of the semi-open timbered roof. The internal walls of the old first floor below are replaced in this new second floor by folding screens, so that besides forming one large room, the new floor area is also divisible into three class-rooms with a wide corridor. The interior of this room is finished with stock brickwork and stone mullioned windows, the timber trusses and half timber filling above the screens are all left the natural colour of the wood, while the plaster is finished with the wood float. The floor is laid with wood blocks on a steel and concrete floor covering in the old building. A coal lift has been constructed from the old basement up to the new story, the well being utilised for the electric mains. Externally, the old masonry (being badly decayed) has been restored by Messrs. Dreyfus with their patent cement. Other works have also been undertaken at a total cost of 7,000*l*., exclusive of the cost of the site, architect's fees, and other expenses, the whole scheme having cost about 10,750*l*. The work has been carried out by Messrs. Rudd & Son, of Grantham, as general contractors; for masonry, the Bath stone firms; brick facings, Messrs. Broad & Co.; red moulded bricks in chimney stacks, Messrs. Wheeler & Sons; green slating, Messrs. Roberts, Adlard & Co.; plumbing, Messrs. Lincoln & Sons; wood block flooring, Messrs. Turpin & Co.; folding screens (to architect's design), Messrs. Peace & Norquay; wrought iron work in railings and gate, Messrs. Walton & Co.; coal lift, Messrs. Waygood & Co.; electric lighting and bells, Mr. W. Mackie; casements, Messrs. Howard & Co.; lead glazing, Mr. Jackson; wood carving, Mr. Taylerson. No clerk of works was employed. the work being carried out under the direct supervision of the architect, Mr. Arthur T. Bolton, of Westminster.

BAPTIST CHAPEL, BARRY DOCK.—The new chapel for the English Baptist Church, Holton-road, Barry Dock, was opened on the 16th inst. The style is Italian Renaissance. The plan consists of ground floor and gallery all round to seat 960 persons. To the rear of the pulpit there are nine class-rooms and minister's room, having access to the basement floors and two exits from the church floor. The basement floor contains a class-room to seat 500 persons and a caretaker's room, and has four entrances from outside, independent of the church

floor entrance. The whole of the work has been executed from the design of Mr. John Morgan, architect, Brynteg, Blaenavon, Mon., Messrs. Lloyd & Tape, Barry Dock, being the contractors. The amount of the contract was about 3,725*l.*

FREE CHURCH, FORTROSE, ROSS.—On the 9th inst. the new Free Church at Fortrose was opened. The building is Gothic in style, and the architect was Mr. John Robertson, of Inverness. The church has a nave and transept, with the pulpit at one end and a gallery stretching across the other end. A spire rises to some 112 ft. The principal contractors were:—Masonry, Messrs. M'Donald & Son, Inverness; carpenter, Mr. R. M'Lennan, Fortrose; slater, Mr. Gray, Inverness; painting, Messrs. M'Leod & M'Intosh, Inverness; plasterer, Mr. D. Arthur, Fortrose; heating, Messrs. M'Kenzie & Moncur, Edinburgh. The building is to be lighted with acetylene gas, Mr. Allen, Nairn, having this contract.

DEPTFORD MARKET.—Sir J. Wolfe Barry, the engineer appointed by the Corporation, has drawn up a report upon the proposed extension of the Foreign Cattle Market, for which an Act was obtained in last Session of Parliament. The cost of the branch railway to the London, Brighton, and South Coast line, and the tramway outside the market, is calculated at 32,250*l.* The estimated expenditure upon other new works amounts to:—Lairage, 21,000*l.*; slaughter-houses, 5,000*l.* (a first instalment); a continuous river frontage of 880 ft., by constructing a junction of the present three jetties, 16,000*l.*; and acquisition of property in the vicinity, 22,000*l.*; the aggregate outlay being about 97,000*l.*

PUBLIC HALL, LONMAY, N.B.—A new public hall, which has been erected at Lonmay, was opened on the 11th inst. The hall has accommodation for between 400 and 500. The architect was Mr. Farquhar, Craigellie. The contractors were:—Joiner work, Mr. Farquhar, Lonmay; mason work, Scott & Murray, Lonmay; plasterer work, Mr. Noble, Fraserburgh; and slater work, Mr. Chas. Cranna, Crimond. Mr. James Hendry, Knowsie, was inspector of works.

COTTAGE HOSPITAL, DUNFERMLINE.—The Moray wing, which has just been added to this hospital, was opened recently. The architects were Messrs. S. Mitchell & Wilson, Edinburgh.

THEATRE, LEEDS.—The Queen's Theatre, Leeds, is being erected for Messrs. Morrell & Mouillot and Messrs. Dotridge & Longden. The builder is Mr. S. F. Davidson, of Newcastle-on-Tyne. The building now in course of erection is situate at the corner of Meadow-road and Jack-lane, and will be faced with red bricks and stone dressings. The dimensions are as follows:—From curtain to back wall of pit, 72 ft.; width of auditorium, 78 ft.; stage, from curtain to back wall of stage, 41 ft.; four exits are provided from the pit, three from the gallery, and two from the dress circle. The plan has been arranged so that one pay office serves for the whole of the house, and the theatre will hold about 4,000. Messrs. W. Hope and J. C. Maxwell, of Newcastle-on-Tyne, are the architects.

HOTEL, MULLION, CORNWALL.—A new hotel is being erected near Poldhu Cove, Mullion. Mr. Walter Wood, of Gloucester, has designed the building, and under the direction of Mr. George Williams, clerk of the works, the construction is being carried out by local men, Messrs. George & Sons undertaking the masonry and Mr. J. H. Matthews the carpentry. The building has a frontage of 175 ft. and a width of 70 ft. It is practically constructed of rock, hewn out of the beach at Poldhu Cove.

LIBERAL CLUB, BLACKPOOL.—A new Liberal Club has been erected at Blackpool. The architect is Mr. Herbert Wade. There are three shops in Victoria-street and three in back Victoria-street. The entrance is at the westerly end of the building. On the first floor are a reading-room, smoke-room, secretary's room, assembly-room, and steward's store-room. The billiard-room and card-room are on the top story. There is also other accommodation upon both floors. The general contractors were Messrs. S. Butterworth & Sons, and the sub-contractors—joinery, Messrs. T. Lawson & Co.; plumbing and painting, Mr. S. Walsh; brickwork, Mr. G. Sparrow; plastering and slating, Mr. W. Walker; electric lighting, Mr. R. Wilkinson; heating and ventilating, Messrs. Dawson & Co., Stalybridge.

FIRE-ENGINE STATION, CARLISLE.—On the 7th inst. a new fire-engine station was opened in Spring Gardens-lane, Carlisle. The new station, which has been built by Mr. Bell from plans prepared by the City Surveyor (Mr. H. C. Marks), takes the place of the temporary premises used for some time past in West Tower-street. It consists of an engine house, recreation-room, store-room, lavatories, and bath, apparatus for washing the hose, and a tower about 60 ft. high.

MUNICIPAL BUILDINGS, MARGATE.—New municipal buildings have just been opened at Margate. The new buildings occupy a position on the old market site, immediately south of the Town Hall, and divided therefrom by a passage some 16 ft. wide, connecting the Market-place with Duke-street. On the ground floor are the offices of the borough rate collector, the water works department, the sanitary inspector, and toll collector, with a public lavatory. On the first floor is a magistrates' room, a suite of offices for the borough engineer's department, including rooms for the borough engineer, assistant surveyor and draughtsmen, also a plan room and suite of lavatories for the use of members of the Council, officials, and others having business in the place. This floor is connected with the Town Hall by a passage for the convenience of the magistrates and officials. The door of this covered way opens directly into the Court-room. In the main front of the building an area of 1,400 ft. super is reserved for market stalls, covered by an iron and glass roof carried on light iron columns. The plans were produced in the office of the Borough Engineer, Mr. Albert Latham, and the work has been carried out under contract by Mr. L. Seager, of Sittingbourne.

GENERAL POST OFFICE, LIVERPOOL.—The new General Post Office at Liverpool will, it is expected, be opened at Easter. The architect of the building is Mr. Henry Tanner, Chief Architect of the Office of Works. The style is the Italian Renaissance. The front elevation is in Victoria-street; one side flanks Sir Thomas-street, and the other faces Stanley-street. The length of the Victoria-street frontage is 223 ft., and from the street level up to the roof there is a height of 83 ft. Measured from the basement level the height of the five stories is 96 ft. The Stanley-street elevation is 260 ft. in length. At its Whitechapel end are two openings into the loading yard. The lower part of the yard is open, the upper part next the new building has a glass roof 50 ft. by 178 ft. The vans, probably entering from Sir Thomas-street and Cumberland-street, will draw up at an elevated loading platform, 178 ft. long and 15 ft. wide. The elevation in Sir Thomas-street is 275 ft. in length. The heating work has been carried out by Messrs. Dargue, Griffiths, & Co., Liverpool. Messrs. Henry Johnson & Sons are the contractors for the plastering, concreting, tiling, and granolithic (corridors, &c.); and Messrs. Wilby & Sons did the plumbing and painting. The common bricks were supplied by the Ravenhead Brick Company, St. Helens; buff-facing bricks by Ashton Hall Brick and Coal Company; glazed bricks by Dennis, of Ruabon; Messrs. Easton and Anderson supplied the heaters; and Doulton's provided the sanitary appliances. The steel and iron work was executed by Messrs. E. C. & J. Keay, Birmingham; and the wood fittings were supplied by Messrs. Brown & Backhouse, Liverpool; Pearson & Brown, Eccles, Manchester; W. Thornton & Sons, Liverpool; Delaney & Shanks, Birkenhead; and A. White & Sons, Liverpool. The general contractors are Messrs. Thornton & Sons, of Liverpool.

CALEDONIAN FIRE AND LIFE INSURANCE COMPANY'S OFFICES, LONDON.—Considerable structural alterations have recently been made at the London offices of this company. The offices are situated in King William-street. The alterations have mainly taken place in the Life Department of the office, and consist of the removal of heavy cross walls and a stone staircase from the ground floor, and the substitution of an internal mahogany staircase leading from the general offices on the ground floor to the secretary's and other offices situated upon the first floor. The new Life office has been refitted with mahogany counters and fittings. The premises have been heated by low pressure hot water, by Messrs. Edwards & Son, of Great Marlborough-street. The general contractors for the works were Messrs. Thompson & Beveridge, of Albany-street, N.W. The alterations were designed and carried out under the personal supervision of Mr. Howard Chatfeild Clarke, of Bishopsgate Street Within.

ADDITIONS TO NAZARETH HOUSE, CARDIFF.—The extensive additions to Nazareth House, Cardiff, which have been in course of execution for the past few months, are now finished. The additions are situate to the east of the block, with which they are connected by an entrance hall and staircase. They abut upon Colum-road. The additions consist of a block of buildings over 90 ft. in length and 62 ft. in height. The lower floor is devoted to sitting-rooms, dormitories, &c., while the whole of the upper part consists of a chapel for the use of the inmates of the institution. The building is in the Early English style, in harmony with the older portion. The walling is of blue Pennant stone, with Bath stone dressings. The height to the eaves of the main roof is 34 ft., and to the ridge of the gable 62 ft., while the top of the turret is 67 ft. above the ground. The building is in two floors, and the ground floor is 13 ft. in height. It is connected with the old building by a staircase of patent stone, leading to a corridor. Thence turning to the right is a bathroom, a bedroom for the use of the sisters, a visitors' room, and at the end of the corridor a small infirmary abutting on Colum-road. To the left of the corridor are a cloakroom and domestic offices and small bedroom. Beyond this is the old men's sitting-room with windows facing across the gardens in a westerly direction. Opening out of this room is a doorway into the covered space at the end. The old men's dormitory is adjacent. In this room there is accommodation for fourteen beds, and next to this, also abutting on Colum-road, is another room, also for use as an infirmary. At the end of the corridor, running at right angles to Colum-road, is an entrance doorway and staircase for use by the priests. The northern end of the new block is taken up with a covered space for the old men to take exercise and sit and smoke in wet weather. Behind the covered space is the covered entrance from Colum-road. The whole of the upper portion of the new building is taken up with the chapel, which is 33 ft. wide and 91 ft. long. Though the chapel is for the inmates of Nazareth House, a portion at the lower end will be set apart for the use of the public. At the southern end of the nave is the sanctuary, 30 ft. 6 in. by 21 ft. On the east of the sanctuary is the sacristy, and on the western side, divided from it by two arches and a carved wood screen, is the choir. The capitals of the chancel arches are carved. The roof is of the open-timbered kind, of pitchpine. The floor of the corridor and halls of the lower part of the building are of tiles, and the other rooms are of pitchpine. The floor of the nave of the chapel is of pitchpine blocks, while the floor of the sanctuary is of oak. The architect is Mr. E. W. M. Corbett, and the contractors are Messrs. W. Thomas & Co., whose clerk of the works is Mr. Shelley.

BANK, LEEDS.—A new bank has been erected in Park-row, Leeds, for Messrs. Wm. Williams, Brown, & Co. The architects of the new premises were Messrs. Alfred Waterhouse & Son. The block covers an area of nearly 100 ft. by 80 ft. The frontage to Park-row is 80 ft., to Greek-street and Russell-street about 100 ft. From the street level to a height of 26 ft. the exterior is of polished grey Dalbeattie granite, relieved with courses and pillars of red granite. Above the granite the structure is faced with glazed buff terra-cotta. The pavilions rise to a height of 90 ft. above the street. Double sets of swing-doors give admission to the bank, a lofty apartment, lined throughout with faïence from the Burmantofts branch of the Leeds Fire Clay Company. The colour scheme is light buff, relieved with brown and blue, whilst the capitals of the pillars supporting the ceiling are picked out in gold. The counter is 70 ft. long. The managers' rooms are at the rear. In the basement, covering an area of about 75 ft. by 50 ft., are the strong rooms. These have arches of firebrick, upon which rests solid concrete 4 ft. in thickness. The floor is likewise of concrete. The bullion-room is lined throughout with hardened steel plates. A self-locking lift conveys the bullion, books, &c., from the bank to the strong rooms beneath. A large luncheon-room and other accommodation are provided for the staff in the basement. On the upper floors of the building are suites of offices, some fifty rooms in all. Strong rooms are also provided. The entrance to these upper floors is in Greek-street, and they may be reached both by staircases and by a lift. The various contracts have been executed by the following:—Excavations and concrete foundations, Mr. S. Macfarlane; builders and joiners, Messrs. Armitage & Hodgson; smith's work, Messrs. John Butler & Co.; plumbing, Messrs. H. Braithwaite & Co.; plastering, Messrs. J. P. Mountain & Son; slating, Messrs. Watson & Worsnop; stairs, &c., Mr. Alfred Walker; painting, Messrs. Frederick Jackson & Co.; granite work, Messrs. Newall, Dalbeattie, N.B.; terra-cotta, the Burmantofts Company; ivory-glazed bricks, the Farnley Iron Company, Limited; salt-glazed bricks for strong rooms, Messrs. Wm. Ingham & Sons; desks and fittings, Messrs. Marsh, Jones, & Cribb; ornamental ironwork, Messrs. Hart, Son, & Peard, London and Birmingham; wood-block flooring, Messrs. Illingworth & Co.; strong rooms, the Ratner Safe Company, London; passenger lift, Messrs. R. Waygood & Co., London; electric lighting, Messrs. Belshaw & Co., London; ventilators, Mr. Wm. Towler; heating apparatus, Messrs. Jefferies, London; and ironmongery, Mr. James Gibbons, Wolverhampton. Mr. Wm. Bruce was the clerk of works.

NORTHERN COUNTIES STATION HOTEL, BELFAST.—This hotel is now open for the reception of visitors. It contains coffee, drawing, writing, and smoking rooms, with baths and lavatories, together with some twenty-seven bedrooms, all upon two floors. Messrs. M'Laughlin & Harvey erected the main building, and the internal woodwork and painting were done by the Company's own workmen, under their works foreman, Mr. Farr. The hall is entered off the platform. It is laid with white Sicilian marble tiles, and the tiling of it was executed by Messrs. W. R. Wilkinson & Co., Limited, Newcastle-on-Tyne, who also did the concrete and marble staircase. To the left on entering is the coffee-room, which is capable of accommodating about sixty people. The entire decorations—with the exception of those in the coffee-room and on the staircase, which were carried out by Messrs. George Morrow & Sons, Belfast—were executed by Messrs. Maple & Co., Limited, of London, who also supplied the furniture throughout the hotel. There is electric light installation through the establishment. It was erected by Messrs. W. Coates & Son, Limited, Belfast, while the fittings were supplied by three London firms, viz., Messrs. Benson & Co., Faraday & Son, and Taylor & Tucker. The plumbing and gasfitting were done by Mr. A. Lowry, of Belfast. The building was designed by Mr. B. D. Wise, under whose personal supervision the work was carried out.

NEW HAMMERSMITH THEATRE.—The new Hammersmith Theatre of Varieties is situated in King-street, at the corner of Mansion House-street. The frontage of King-street is designed in the modern French Renaissance style, and is executed in Doulting stone and red-brick facings, with a feature over the main entrance of an illuminating tablet in a deeply-

recessed arch, spanning the whole width of the entrance, at the lower part of which is a shelter, under which is the entrance to a crush-room, which is 18 ft. by 14 ft., and 19 ft. high, with a wall tiling in faïence. The greatest difficulty the architect had to contend with was the extreme narrowness of the old building site, which was only 40 ft. A foyer on an elevation has been provided in the balcony tier, with two promenades the whole length of the building. The lighting is by electricity. The stage is 36 ft. deep. The buffet bar in the rear of the pit and on the balcony tier is fitted in the Flemish style, of Austrian oak. The whole length of the theatre is 198 ft., the width through 40 ft., and the grid is 48 ft. above the stage. The stalls are approached from the crush-room through a barrel-domed corridor, and there are emergency exits in Mansion House-street. The work has involved an expenditure of 30,000*l*. The general contractors were Messrs. Godson & Sons, of Kilburn. The decorations and fibrous ceilings and walls were carried out by Messrs. De Jong, from special designs prepared by the architect. The ventilation was by Messrs. Boyle & Co., the heating by Messrs. Rosser & Russel, the electric light by Messrs. Vaughan & Brown, the stage by Mr. Cawdrey, the fittings by Messrs. Brown & Co., of Hoxton, and by Mr. Wm. Rowe, of Clapham. The architect was Mr. W. M. Brutton, of Trafalgar-square.

SANITARY AND ENGINEERING NEWS.

THE HIGH PEAK WATER SCHEME.—The reports of the Leicester Water Committee, and the engineers and experts, with respect to the proposal to acquire the waters of the Derwent and the Ashop, for Leicester, have been circulated. The Water Committee consulted Mr. J. B. Everard, C.E., their engineer, Mr. R. E. Middleton, C.E., and Mr. G. F. Deacon, C.E. All are agreed upon two points. That an additional supply is urgently needed, and that the ideal supply, alike to quantity and quality, is to be obtained from the Derwent and the Ashop. The Water Committee have accordingly declared in favour of a scheme which will entail a total outlay of 4,144,000*l*., and provide a supply of over thirty million gallons a day. The Water Committee recommend that a clause should be embodied in their bill giving Derby the option of joining a joint board, and enabling them and other authorities near the line of aqueducts the right to obtain water in bulk at a fair price. They propose that at the outset 1,520,000*l*. should be spent on the first instalment of the work.—*Sheffield Independent.*

UPTON ASYLUM, CHESTER.—We have received some further particulars as to the warming and ventilating of this building, of which wegave some particulars on page 439. The Plenum system has been employed; and each of the patients' blocks and the recreation hall are arranged with separate fans and motors, so that any block may be worked at will. The fans are driven by electric motors, and are easily speeded to high, low, or intermediary speeds as required, according to the exigencies of the weather. The heating surface is placed in chambers or vaults beneath the various dormitories, wards, or single rooms, and the air is blowing over these in winter time, so that it is warmed to a temperature of 80 to 90 deg. Fahr. before it is allowed to pass into the various rooms to be warmed and ventilated. By this system it is impossible to get warmth without having ventilation. The basis of the air supply is taken as 1,250 to 1,500 cubic feet of air per patient per hour. The air inlets are about 8 ft. to 9 ft. from the floor level, and the extraction is at the floor level. The heating is done by low-pressure steam worked at not more than 5 lb pressure throughout the whole of the building. The steam is generated in one, two, or three boilers, each boiler being 28 ft. by 7 ft. diameter (Lancashire type), and carrying 120 lbs. working pressure. This steam is conveyed in a 9-in. diameter pipe to the pump-room. From thence it is taken to the electric-light engines at this pressure (120 lbs.) and passed through the engines, the exhaust being taken to a special receiver, from which all the grease from the steam is separated. The steam is then sent into the low-pressure pipe, and carried throughout the whole building for heating the buildings, or the hot water services. When there is not sufficient exhaust steam, the plant has been so arranged that live steam will come through into the low-pressure main at the working pressure of 5 lbs., supplying the make-up steam required as is necessary. Thus there is practically no waste going on, the whole of the condensed water being returned into an automatic receiver, and being pumped into the boiler, to be used again. The returned water is at a high temperature, and often reaches over 200 deg. Fah. The hot water services to the various blocks are procured by separate heaters being placed in the basement of each block, and through which the exhaust steam passes, thus heating the water to a high temperature for all kinds of domestic purposes. The work has been done by Messrs. Ashwell & Nesbit, of London and Leicester

STAINED GLASS AND DECORATION.

WINDOW, BRADFORD UNITARIAN CHURCH.—A new stained glass memorial window has been added to this church, the subject being the Parable of the Talents. It is the work of Messrs Powell Bros., of Leeds.

WINDOW, PARISH CHURCH, BRIGHTON.—A small new painted glass window has been erected in the parish church of Brighton, by subscription, in memory of the late Frederick Beal and Virginie his wife. This window is on the right hand side of the main entrance of the church. The window contains a figure of St. Nicholas, as the Saint to which the older and former parish church is dedicated. The window was by Mr. C. E. Kempe.

FOREIGN.

FRANCE.—M. Bonnat has been appointed Vice-President of the General Committee for the 1900 Exhibition in place of M. Puvis de Chavannes, and M. Detaille has succeeded to the late painter's place in the Conseil Supérieur of the Ecole des Beaux-Arts.——M. Bottée has been commissioned to make a model of the new lockplates which are to replace the ancient work of the same class in the Palais d'Elysée, with their emblems of the First Empire. The new locks will have a head of the Republic surrounded with laurels and with the letters "R.F." Whatever the talent of the artist, it is most regrettable that the history of the building should be effaced in this way.——The "Société Populaire des Beaux-Arts" has started a subscription to raise a monument to Viollet-le-Duc.——At the National Art School at Lyons a special course is to be established for instruction in decorative design as applied to textiles.——Two monuments are to be raised to the memory of Delibes (a musical composer little known out of France), at la Flèche and at St. Germain-du-Val (his native place). The first will be designed by M. Marqueste, the second by M. Charier-Beulay. The double inauguration will take place in May next year.——The Municipality of Paris, in co-operation with the "Vieux Paris" Committee, is taking measures for the strengthening and preservation of the fine windows in the churches of Saint Séverin, St. Médard, and St. Gervais.——The steam tramway from the Luxembourg Gardens to Arpagon is to be prolonged to Etampes.——The new hospital at Tunis is to be opened in a few weeks. It is planned and designed by a young pupil of the Ecole des Beaux-Arts, M. Jean Resplandy, now a Government architect of Tunis.——The death is announced, at the age of eighty-two, of the landscape painter Bellel, originally a pupil of Justin Ouvrie and of the Ecole des Beaux-Arts. For many years he exhibited pictures of Italian and Oriental landscape, and the Luxembourg possesses a fine charcoal drawing by him of the Valley of St. Amé in the Vosges. He executed, for the Hôtel de Ville of Paris, a view from the bridge at Champigny. M. Bellel had unhappily been blind for some years before his death.

MISCELLANEOUS.

THE REBUILDING OF KEW BRIDGE.—Adverting to our "Note" of October 22 (p. 358 *ante*) and our recent announcements on this matter (pp. 415 and 467 *ante*) we find that the County Councils of Middlesex and Surrey have jointly drafted a Bill, for introduction next Session, whereby they seek to amend and extend the powers of the Kew Bridge Act, 1898, and more particularly Section 38, in respect of the borrowing powers conferred by that Act upon the Councils, for the purpose of the works authorised by the Act, and to provide for an increase of the amounts which they have authority to borrow. The Bill, if passed, will therefore, it appears, remove the difficulty presented by the amount of Mr. E. Gibb's tender. The two Councils have already agreed to proceed with the work upon the basis of that tender, at 150,000*l*. Mr. Gibb's original tender was for 169,288*l*., and Sir J. Wolfe Barry, whose estimate came to 118,000*l*., has calculated that from 20,000*l*. to 25,000*l*. might be saved by substituting internal brickwork or concrete for stonework.

BIRMINGHAM MASTER BUILDERS' ASSOCIATION.—The annual meeting of the Birmingham Master Builders' Association was held on the 17th inst. at the Grand Hotel, Mr. J. Bowen presiding. The annual report, presented by the Chairman, stated that the committee were able to record that the period of good trade, mentioned last year, had continued. With increased prosperity in the building trade there had been greater competition, in many cases the advance in contract prices obtained being insufficient to cover increased cost of material and labour. A notice had been received from the bricklayers asking for alterations in rules and a rise in wages to 10d. an hour. That notice would receive the careful attention of the committee, and it was felt that uniform working hours must again be secured. It had become year by year increasingly evident that to successfully combat the ever-growing demands of the operatives, it was necessary that they should be dealt with by an amalgamation of towns rather than by individual associations. Federations of employers having been established in Lancashire and Cheshire and in the West of England, and the attention of the National Association having been drawn to this great need, England and Wales had been divided into four federation areas. The committee had had under their consideration the new regulation of the Public Works Committee of the City Corporation, that before making connexions to the sewers a deposit should be made to cover the cost. A deputation waited upon the Public Works Committee and endeavoured to obtain some modification of this arbitrary requirement, but they regretted to report that their efforts were unsuccessful.—The Chairman congratulated the Association upon the progress that had been made. The membership had increased during the year from sixty-nine to ninety-three. The desirability of every builder in the district joining the Association could not be too strongly insisted upon, especially in view of the formation of the Midland federation. Now the Birmingham radius had been extended he hoped builders in the outlying districts would see their way to join the Association. With trade societies taking up a strong position, and constantly federating, it would be impossible for them as employers to hold their own unless they took united action.—The following officers for the ensuing year were reappointed:—President, Mr. J. Bowen; Vice-President, Mr. F. G. Whittall; Treasurer, Mr. G. Twigg; Secretary, Mr E. J. Bigwood. The Secretary, in acknowledging his appointment, stated that financially the Association was in a better position than ever it had been. The total receipts amounted to 311*l*., and after all liabilities there was a balance of 172*l*. He regretted that more consideration was not shown to the trade by the City Council, and he thought their only remedy was to return a practical builder to the Council. The meeting then terminated. The annual dinner was held in the evening at the Grand Hotel, Mr. John Bowen presiding. After the usual loyal toasts had been honoured, Mr. C. H. Barnsley gave "The City and Trade of Birmingham." Alderman Edwards, who replied, spoke of a prophecy which was made to him forty years ago to the effect that within the ensuing twenty-five years Birmingham would be half rebuilt. It had turned out to be perfectly true, and it might have been repeated with equal truthfulness many a time since; in fact, Birmingham was still in the course of being rebuilt. He had been reported as saying that within his recollection the particular district in which he spoke had gone up 50 per cent. in value; but what he did say was that it had gone up 50 per cent. within the last ten years. In responding to the toast of "The Association," which was submitted by Mr. W. Hale, the President said they did not combine simply to advance prices to an unreasonable extent, but to uphold their rights and privileges. The time had come when the builder should be regarded as equal to the member of any other trade or profession. Speaking of trade unions, he recognised the good which they did for the worker, but expressed the opinion that the time would come when they would reach the limit of concessions which the masters could safely grant them. The federation which the workers had established had made a similar movement of the employers necessary, and the Master Builders' Association of Great Britain had taken up the matter and formed four federations. That of the Midlands would embrace eleven counties and the whole of North Wales, and it was hoped that it would be in working order during the year. He hoped that the difficulties which lay before them would be dealt with in a conciliatory spirit. Other toasts followed.

THE CHEMISTRY OF ACETYLENE.—On Monday evening last Professor Vivian B. Lewes delivered the first of a course of four Cantor lectures on "Acetylene" before a large audience at the Society of Arts. The lecturer briefly related the history of acetylene from the time of its discovery to the present date, and described the methods by which acetylene may be synthetically prepared, and finally discussed the chemical and toxic properties of the gas. Referring to the action of acetylene upon brass and other copper alloys, Professor Lewes said that experiments which had been made in Berlin and France showed that pure acetylene had practically no action upon these alloys, but that when the gas contained ammonia as an impurity, there was some danger of the explosive acetylide of copper being formed when allowed contact with fittings composed of copper alloys. Unalloyed copper should never, of course, be employed for acetylene gas fittings. The lecture was illustrated by several striking experiments demonstrating the behaviour of acetylene under various conditions.

EXAMINATIONS IN BUILDING AND SANITARY CONSTRUCTION.—The Carpenters' Company announce two examinations in the above-named subjects, intended to be suitable for clerks of works, builders' foremen, and others who have to deal with the construction of buildings. They are to be held on Thursday and Saturday, December 1 and 3. The board of examiners consist of Colonel Stanley Bird, Professor A. Wynter Blyth, Professor Banister Fletcher, Professor Henry Robinson, Professor T. Roger Smith, Mr. John Willson (Warden of the Company), Mr. Howard Colls, Mr. Stanton W. Preston, and the Presidents of the Institute of Architects, the Architectural Association, the Institute of Builders, and the Clerk of Works Association. Particulars can be obtained from the Clerk of the Carpenters' Company, Carpenters' Hall, London Wall.

THE REGISTRATION OF PLUMBERS.—On the 18th inst. a conference of representatives of various bodies interested in a Plumbers' Registration Bill was held in the Carpenters' Hall, London-wall, E.C. The conference was convened by the National

Association for the Promotion of Technical and Secondary Education, with the object of considering under what conditions the Plumbers' Registration Bill of last session would be acceptable to all the parties interested. Mr. S. W. Preston (Master of the Carpenters' Company) presided. After considerable discussion, the following resolutions were passed, it being understood that they were passed without prejudice to the question of whether any Bill for the national registration of plumbers be introduced or not:—"Resolved, that if a Bill be introduced it should provide that these will be placed upon the Registration Council (*a*) directly appointed representatives of local municipal authorities aiding plumbing classes, and (*b*) an adequate number of directly appointed representatives of teaching institutions and of such additional organisations as are specially interested in the education and registration of plumbers, including the following, amongst others, City companies connected with various sections of the building trade: the Sanitary Institute, the Royal Institute of Public Health, the Royal Institute of British Architects, the City and Guilds of London Institute, the Institute of Builders, London Polytechnic Council, and the Association of Technical Institution." "That the Registration Council be instructed to accept, as qualifying for registration, the certificate of such public examining body or bodies approved by a Government Department, and that such acceptance be not withdrawn without due notice nor without the consent of the Department concerned." "That only a small fee for registration be charged to operative plumbers, and that the Registration Council shall not remove from the register any operative plumber now thereon solely by reason of his failing to pay a subsequent fee." "That the examination for the purposes of registration should test the candidates' general knowledge of other sections of the building trade in addition to their special knowledge of plumbing." "That in any Bill, the Council created by the Bill should be the actual managing body, and have direct charge of the registration, and, further, that the conduct of the Bill should not be left in the hands of any one body."

BOARD SCHOOLS IN LONDON.—On October 28 the School Board for London opened at Rotherfield-street, Islington, their 431st completed school, in providing for the needs of the 514,000 children in London. The Board have just framed their schedule of sites to be taken for additional schools during the next twelve months. The gross total of the new sites is seventy-five, yet, inasmuch as ten of these are "alternative sites" for five schools, the net number is seventy. Taking a mean between each pair of alternative sites, we find that the aggregate area of the several premises and parcels of land—which range between 615 square feet (No. 50, White Lion-street, Clerkenwell) and 115,260 square feet (Sprules-road, Deptford)—amounts to nearly 42 acres, of which about 26 acres is garden or other vacant ground. The seventy-five sites in question are situated in the various divisions thus:—City (1)—Stoney-lane*, adjoining Gravel-lane Board School. Chelsea (5) — Newcombe-street, Edinburgh-road*, and St. Mark's-grove, Kensington Parish; Cobbold-road, and Blomfield-gardens, Hammersmith. Finsbury (4)—Barnsbury-park, Islington; Nos. 43 and 44, Compton-street, with all Northampton-place, and either No. 58 or No. 50, White Lion-street, Clerkenwell. Greenwich (15)—Seven (two being alternative) in Lewisham, three in Deptford, three (two alternative) in Plumstead, ten houses and yards in Powis-street and Howard-yard, and No. 16, Parson's-hill, Woolwich. Hackney (6)—Shap-street and Ormsby-street, Shoreditch; two in St. John, Hackney; and three in St. Matthew, Bethnal Green, Parishes. East Lambeth (6)—Five in Camberwell, and twelve houses in Dean's-court and Dean's-buildings, Flint-street, Newington. West Lambeth (16) — Four sites (including forty-nine houses) in St. Mary's, Lambeth; three in Wandsworth; five in Battersea, including either "Glenelg," Grandison-road, or the garden (in part) of Lavender Lodge, Lavender-sweep; Ensham-street, Tooting; Bonneville-road, and either Bedford-road or Aristotle-road, Clapham. Marylebone (7)—Montpelier House, Brecknock-road, and Montpelier Cottage, Leighton-grove, Camden Town; five in St. Pancras; and "Kingsgate," St. Cuthbert's-road, Kilburn. Southwark (3)—Alexis-street, Bermondsey*; Hatfield-street and Broadwall, Christchurch Parish; and West-square, St. George-the-Martyr Parish. Tower Hamlets (12)—Christian-street and Grove-street; and Cable-street, St. George's-in-the-East; Trinity Chapel, with its schools and houses, Hanbury-street, and twenty-one houses and yards in Hanbury-street and Old Montague-street, Mile End New Town; Redman's-road, Mile End Old Town; Aston-street and Condor-street, and Northey-street, Limehouse; High-street*, and Marner-street, Bromley; Broad-street, Ratcliffe; nine houses in Pigott-street, Poplar; and thirteen houses, forecourts, &c., in Ricardo, Southill, and Upper North streets, Poplar.

GLASGOW ARCHÆOLOGICAL SOCIETY.—The forty-second annual general meeting of the Glasgow Archæological Society was held on the 17th inst. Mr. David Murray, LL.D., President of the Society, occupied the chair. The annual report was read. It stated that during the session six meetings had been held and a number of papers read. The number of members admitted in 1897-98 was twenty-one. The council regretted that the committee had not yet been able to complete the Society's report on the investigations on the line of the Antonine Wall; they were hopeful, however, that it would be issued during the present session. The Chairman moved the adoption of the report, which he said showed that the Society was doing good work, and that there was much life in it. The report was adopted. Office-bearers were then elected. Archbishop Eyre was to have been present to read a paper on "The Preservation of Scotch Ecclesiastical Monuments." In his absence it was read by Mr. J. D. Duncan. His Grace said that in the year 1392 Bishop Bar, who had presided over the see of Moray for thirty years, wrote to King Robert III. that he was broken down with the infirmities of age and so far reduced in circumstances as to be scarcely able to maintain a slender household. In the most touching and solemn words he complained that on the Feast of St. Botolph, 1390, the king's own brother, the Earl of Buchan, known as the Wolf of Badenoch, had descended from the hills with a band of wild Scots, and given the magnificent Cathedral of Elgin to the flames, and he besought the royal help to compel the incendiaries and malefactors to restore the church "that was a special ornament to the land, an honour to the realm, a delight to strangers, and the foreigners who came to see it, a praise and boast among foreign nations, lofty in its towers without, splendid in its ornaments within, and famous for the pious worship of God." In like manner might they plead, not indeed for the restoration, but for the preservation of the old ecclesiastical ornaments remaining in Scotland. The Society had been established for the study of ancient monuments and for their preservation. Confining his remarks to the larger churches and ruins still remaining, he said we had good but simple examples of early work at Jedburgh, Kelso, Fearn, Pluscardine, Cambuskenneth, Deir, Sadael, Ardchattan, and Oronsay. He called attention to the Scotch ecclesiastical ornaments that remained from the years 1060 to 1560, a period of 500 years; but confining himself to the cathedrals, abbeys, and priories, the cathedrals of Scotland were thirteen in number. Glasgow and Kirkwall were the only two remaining in a more or less complete condition. Of the other eleven, five were now in use in a modified condition —namely, Brechin, Dornoch, Dunblane, Dunkeld, and Lismore. Six were only ruins, though Whithorn was used as a parish church until 1822. They were ruthlessly dealt with in the past. It was the place and the privilege of his hearers to protect them from further injury, for they called for their care on account of their archæological interest and the relation they bore to the art and architecture of the nineteenth century. As a means of stimulating interest in the existing ruins he suggested that the members of the Society and antiquaries in general should spend their holidays in making a round of the Benedictine houses.

SLATE TRADE.—The financial statistics for 1897 recently issued show the largest output ever recorded, an increase in value of over 300,000*l.* The export trade also shows an increase, principally to Germany. Trade continues brisk and the increased output will no doubt greatly check the importation of foreign slates. The Festiniog quarry owners have decided to retain the present terms, and it is anticipated that the Carnarvonshire quarry owners will not make any material changes.

COMMONS PRESERVATION SOCIETY.—A meeting of the Executive Committee of the Commons Preservation Society was held at 1, Great College-street, Westminster, S.W., on Monday afternoon, under the presidency of the Right Hon. G. Shaw-Lefevre. It was reported that since the last meeting of the Committee, two actions in which the Society was interested had been satisfactorily decided by the Court of Appeal. The first referred to a prosecution, instituted by the Lord of the Manor, against a labourer for cutting underwood upon a turf fuel allotment set out under an Enclosure Act at Egloskerry, in Cornwall. It had been held by the Appeal Court that the lord had been fully compensated for all his interests in the enclosed common by the allotment made to him and that he had no part or share in the fuel allotment, the soil of which was held to be vested in the churchwardens and overseers of the parish. The second action was with respect to Towyn Trewan Common at Llanfaelog, in Anglesey, 1,300 acres in extent, upon which it was sought to erect an explosives manufactory. An injunction, confirmed by the Court of Appeal on Friday last, had now been obtained, together with a declaration of the rights of the commoners, which would save the Common from the possibility of further encroachments. It was stated that the War Office was purchasing Donyland Heath, near Colchester, for the purpose of a rifle range. The Society had appealed to the Department to make by-laws under the Military Lands Act, 1892, so that when the land was not in actual use for military purposes it should remain open to the public as heretofore, and they asked that a recreation ground should be given to East Donyland, since the Heath, an exceptionally beautifully wooded open space, was the only land in the district available for purposes of recreation. The enclosure of a large portion of Studland Heath, Dorset, alleged to be land subject to rights of common, also occupied the attention of the Committee, and a report was instructed to be drawn up upon the matter. The proposal of the Bournemouth Corporation to introduce a Bill into Parliament with respect to the large open space formed by the Christchurch Fuel Allotment was further considered, and the Committee endorsed an alternative scheme which had been submitted to the Corporation by the Society's solicitors by which the greater portion of the land would be regulated as an open space. An alleged public footpath in the parish of Cleeve Prior, Worcester, had been obstructed. The County Council appointed a committee which held an exhaustive local inquiry and reported that dedication had been proved. As a result, the Council unanimously determined, on June 13 last, to protect the rights of the public in the disputed path.—Upon the motion of the Chairman, seconded by Sir William Vincent, Bart., a hearty vote of thanks was accorded to Mr. Edward North Buxton, one of the earliest members of the Society, for his recent munificent gift of an additional twenty-eight acres of land at Yardley Hill, Epping Forest, to the Corporation. It was stated that the Society was advising Local Authorities and private individuals in upwards of fifty cases of encroachments upon common land, open spaces, roadside wastes, and obstructions of rights of way in different parts of the country.

ABERDEEN MASONS AND GRANITE CUTTERS UNION.—On the 21st inst. Mr. James Souttar, architect, gave an admirable lecture to this Union on the general history of architecture and the characteristics of the various historic styles. In conclusion he said that he had tried to interest his audience in a study which might give them much pleasure and make the world a field of interest and inquiry to them. He advised his hearers to travel as much as possible, and for their encouragement told how, with a few hard-earned savings, he had taken his knapsack on his back and his sketch-book over his shoulder and once and again wandered over countries which some of them had only read about. He should like to think that he had said something to encourage his hearers to go and do likewise.

LECTURE ON THE MONASTIC BUILDINGS OF EXETER.—Mr. Harbottle Reed has been doing good service in calling the attention of the inhabitants of Exeter to the archæological interest of their city, in a lecture delivered to the Exeter Literary Society last week on "The Old Monastic Buildings of Exeter." The lecture appears to have been a very complete survey of the ancient remains or sites of this class of monuments in Exeter, and may arouse in some of the inhabitants a new interest in their city.

EAST LONDON WATER SUPPLY.—The extension of supply in the East London district began on Tuesday in the following localities: Walthamstow, Leyton, Whitechapel, St. George's-in-the-East, City of London, and part of Wapping. To-day (Saturday) the supply will be extended in East Ham, Bethnal Green, Shoreditch, North Woolwich, and Ilford; on Monday to West Ham and Hackney; on the 30th inst. to Wanstead, Woodford, Mile End, and part of Bow; on December 3, Loughton, Chingford, Chigwell, Buckhurst Hill, and the rest of Limehouse, and Poplar. Hitherto the water has been turned on for two periods, morning and evening. On the dates named it will be turned on at the same time, but will run continuously without any intervening cessation. This extension, which is the prelude to complete restoration of the constant supply, comes exactly three months after the original breakdown.

CAPITAL AND LABOUR.

SUNDERLAND SLATERS ON STRIKE.—About sixty-five slaters employed in the building trade at Sunderland have come out on strike for an advance of wages, their demand being for 10d. an hour instead of 9d. The masters offered 10d. for the winter quarter, extending from the middle of November to the middle of February, when they proposed to revert to 9d. The men could not see their way to accept either this offer or a code of rules which accompanied it.

THE MASONS' DISPUTE, SWANSEA.—The masons who left work at the Swansea Docks have now resumed work. When the matter in dispute was fully considered by the Union branch it was found that the action taken by the men was unjustified, and they were ordered back to work. Eleven out of the fourteen have complied with the order, the other three finding employment elsewhere.

LEGAL.

ANCIENT LIGHTS CASE

PACKHAM *v.* HANKINS.

AT the Bristol County Court on the 15th inst., the case of Packham *v.* Hankins was heard. Mr. Vachell (instructed by Mr. T. D. Sibly) appeared for the plaintiff, and Mr. Weatherly (instructed by Mr. Gerard Mosely) represented the defendant.

Mr. Vachell said it was really a High Court case, but it had been decided that the matter should be tried by his Honour, and the parties had signed a

* Those sites marked with an asterisk adjoin existing School Board premises.

consent to jurisdiction. It was an action to recover damages and also to obtain an injunction, because it was contended that the defendant had interfered with and had obstructed the ancient lights of the plaintiff's premises. The plaintiff was Mr. Leonard Packham, a silk mercer and draper, occupying 32, 33, 34, and 35, Wine-street, and the defendant was Mr. Samuel Hankins, who was building premises under a building grant at No. 31, Wine-street. Under the Wine-street improvement scheme the Corporation set back the fronts of several of the houses. Under a contract the defendant was to be the owner of 31, Wine-street, and he had taken the opportunity of placing upon the site a much more important building than the one that formerly occupied the ground. Plaintiff complained that certain walls had been raised in such a way as to affect the light in the well, and to cause a serious diminution of light in the windows.

In reply to his Honour, Mr. Weatherly intimated that he was going to say that the land in question had been taken by the Corporation for purposes of street improvement, and though it did not need an Act of Parliament to give them power to build upon it, the Act did give them power to do that which they could not do but for the Act, namely, to infringe ancient lights, so long as they carried out the purposes of the Act in a reasonable manner. The plaintiff's remedy was against the Corporation, under the Land's Act, and not against the defendant.

The plaintiff stated that the defendant had re-erected the premises on 31, Wine-street, at a higher elevation both at the front and back. It was the height of the back wall that he complained of chiefly. Several of his lights were interfered with, and witness would be put to an extra expense for artificial light.

Mr. Henry Williams, architect and surveyor, said that the back wall had been carried up above the coping 12 ft. or 13 ft., seriously damaging the plaintiff's lights.

For the defence, Mr. Frank W. Wills, architect, was called, and he expressed the opinion that the amount of light taken away was not sufficient to appreciably damage the plaintiff's premises.

Cross-examined: He admitted that he had not visited the premises before the alteration.

Mr. Vachell contended that, in view of the structural character of the premises, the plaintiff ought to have all the light he was entitled to, and that any diminution must be material.

His Honour, in giving judgment, said he did not think there had been any substantial or appreciable diminution of the plaintiff's lights. He did not think that anything that had been done by the defendant had depreciated by one penny piece the letting or selling value of the property occupied by the plaintiff. There must, therefore, be judgment for the defendant with costs.—*Bristol Times.*

ILLUMINATED PUBLIC-HOUSE SIGNS.

Mr. Henry Emanuel, proprietor of the "Buttercup," in the Brompton-road, was summoned at Westminster Police-court on Tuesday by the London County Council for unlawfully extending without permission a projection, namely, an illuminated sign beyond the general building line, contrary to the London Building Act of 1894. The structure complained of, a semi-circular iron framework filled in with ornamental glass, advertising the saloon bar and billiard-room, was erected at a height of 8 ft. above the pavement. The projection, which extended more than 4 ft. over the highway, contained fourteen gas jets for illumination. The attention of the County Council had been drawn by the Kensington Vestry to the defendant's sign, which they considered most objectionable.

In defence it was said that the illuminated framework only replaced an old unsafe one which projected further. Moreover, it did not project as far as the lamps of some of Mr. Emanuel's neighbours.

Mr. Marsham said the projection must be removed. He imposed a nominal penalty of 40s. and costs.

DISPUTE AS TO WAGES.

At the Southwark Police-court on the 22nd inst., before Mr. Paul Taylor, Mr. Edwin Bell, builder, of Aldgate-avenue, City, and 47 and 53, Old Kent-road, a member of the Court of Common Council, was summoned by seven carpenters for balance of wages and an hour's pay in lieu of notice.

Mr. Myers appeared for Mr. Bell, and said great publicity had been given in the Press to these summonses, and Mr. Bell was desirous that his side of the question should be heard. Whatever the result of the summonses was, however, the men should be paid the amount of their claims, although Mr. Bell's contention was that he had already paid the wages which were due.

Edward Scott, the first complainant, said he was employed by Mr. Bell, who was erecting some shops in the Old Kent-road. On Monday, the 14th, he and the other men were not started, and three hours later Mr. Bell came and told them and the foreman to get off the premises. He claimed wages for the three hours of waiting and an hour's pay in lieu of notice, but some of the others were not paid their full amount on the Saturday.

Cross-examined: He did not know that the foreman had a contract with Mr. Bell to do all the carpentring work, and that he was paid the full sum on the Saturday for the carpenters' wages.

Mr. Paul Taylor: There is the fact that the men were told to go by Mr. Bell himself.

Mr. Myers said his client only desired to act fairly and honourably. He had found that he had paid more wages than was proper for the labour done.

Mr. Paul Taylor said the men were clearly entitled to be paid, and he thought they should be given something for their expenses.

The cases were adjourned for a short time, and then the men stated they had been paid the full amount of their claims and something for their expenses in addition.

The summonses were then withdrawn.

Mr. Bell stated he had been subjected to considerable annoyance since the granting of the summonses. Two men had endeavoured to assault him, and some malicious person had cut the main water-pipe and flooded the foundations of four houses. Further, notices had been written on the hoardings in the Old Kent-road as follows:—"Carpenters wanted—no pay."

Mr. Paul Taylor said he would send a person to prison who was found guilty of such offences.

MEETINGS.

FRIDAY, NOVEMBER 25.

Architectural Association.—Mr. Paul Waterhouse on "Oriel and Bay Windows." 7.30 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. W. C. Tyndale on "House Drainage." 8 p.m.

SATURDAY, NOVEMBER 26.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the Sewage and Destructor Works, Ealing. 2.15 p.m.

London and Provincial Builders' Foremen's Association (Memorial Hall, Farringdon-street, E.C.).—7.30 p.m.

MONDAY, NOVEMBER 28.

Surveyors' Institution.—Continuation of discussion on Mr. W. Eve's paper on "Compensation Values of Cattle Foods—Chemist *v.* Valuer." 8 p.m.

London Institution.—Sir Wyke Bayliss on "Art—Contra the World, the Flesh, and the Devil." 5 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Demonstration of Book-keeping as carried out in a Sanitary Inspector's Office, by Mr. A. Taylor. 8 p.m.

Society of Arts (Cantor Lectures).—Professor Vivian B. Lewes on "Acetylene" II. 8 p.m.

Leeds and Yorkshire Architectural Society.—Mr. J Tweedale on "A Cruise in the Eastern Mediterranean"—illustrated. 6.30 p.m.

TUESDAY, NOVEMBER 29.

Institution of Civil Engineers.—Mr. Stanley Robert Kay on "The Effect of Subsidence due to Coal Workings upon Bridges and Other Structures." 8 p.m.

Northampton Institute, Clerkenwell (Lectures on Architecture).—Mr. F. Bond on "Vaulting." 8 p.m.

WEDNESDAY, NOVEMBER 30.

Society of Arts.—Mr. C. H. Bothamley, F.R.S., on "Photographic Developers and Development." 8 p.m.

Edinburgh Architectural Society.—Mr. R. S. Lorimer on "Scotch Gardens, and the Treatment of the Garden in Relation to the House." 8 p.m.

Northern Architectural Association.—The Rev. Canon Savage on "Durham Cathedral." 7.30 p.m.

Liverpool Engineering Society.—Mr J. Denholm Young on "The Basis of Propeller Design." 8 p.m.

THURSDAY, DECEMBER 1.

Society of Antiquaries.—8.30 p.m.

Carpenters' Hall, London Wall.—Building and Sanitary Construction Examination (written), Carpenters' Hall. 5 p.m. to 9.30 p.m.

FRIDAY, DECEMBER 2.

Architectural Association Discussion Section.—Mr. A. E. Henderson on "Santa Sophia and Excursions into Asia Minor."

Glasgow and West of Scotland Technical College (Architectural Craftsman's Society).—(1) Mr. D. Bennet Dobson on "Calculations Simplified." (2) Mr. W. H. Baxter on "Shoring and Slapping." 8 p.m.

SATURDAY, DECEMBER 3.

Carpenters' Hall, London Wall.—Building and Sanitary Construction Examination (oral). 12 noon.

RECENT PATENTS:

ABSTRACTS OF ACCEPTED SPECIFICATIONS.

Open to opposition until January 2.

[1897.] 24,312.—HAND SAWS, &c.: *J. Forsythe & W. O. Stanley.*—A base has openings or slots in each end for clamping-screws; at right angles to the base is the front in which are drilled holes tapped or screwed for clamping-screws, to be affixed on a saw that can be raised or lowered at will; on the bottom of the base is affixed a fence or moveable gauge regulated through the slots so as to allow of its being unfastened or fastened for setting the gauge at will; attached to the front is a saw in which suitable slots are cut to range with the holes in the front to admit of its easy removal or displacement for another saw of a different thickness, or raised or lowered: several parallel saws may be similarly fixed.

26,278.—ROOFING TILES: *F. Latham.*—To render the tiles weather-proof without sheeting, bedding, or pointing, they are made with a weather or water bar or flange on the outside of their top ends, and a weather bar or flange on the underside of their bottom ends; the tile is also cut away at the outside of its bottom end, one side edge is rounded or beaded to form a groove, whilst the other edge has a rounded hooked part or scroll to fit over the beaded edge of the next tile; the bead is cut away at an angle at top and bottom to allow for over-lapping, the scroll being similarly cut away at the top; projections or feet on the underside of each tile's top engage with the lath.

27,361.—OBTAINING MOTIVE POWER FROM THE RISE AND FALL OF THE TIDES: *A. Steiger, C.E.*—The claim is for the combination of a dam built across the bed of a tidal river or the mouth of a tidal basin, containing a turbine chamber, and for a tunnel or tube extending across the dam, adapted to admit water into the turbine chamber through the turbine, with a system of gates or valves for controlling the flow of the water.

27,817.—CERAMIC AND OTHER TILES: *A. Roberts, E. T. Ball, & W. H. Baugham.*—In order to form undercut recesses in the undersides of tiles the bottom die has spaces or openings wherein are placed moveable slides actuated by vertical taper wedges connected to a loose plate underneath the die, thus moving the slides outwards from one another across the die's face, the slides being kept in position against the wedges by springs or india-rubber rings; when the pressed tile is lifted out of the die-box the slides close towards one another and so release the tile.

28,140.—SECURING SCAFFOLDING POLES TOGETHER: *W. & A. Hunnable.*—The invention consists of variously shaped metal clamps, whereof some receive and hold the ends of horizontal runners whilst others grip and hold any part of a vertical pole; the clamp combines (*a*) a metal body having spikes and arms, with lugs for screws, and hooks, carried on the extensions, for holding a chain or band having a solid portion fitted with spikes; or (*b*) two members, connected by a pivot, whereof one has a hook and the other a lug for receiving a threaded hook connected with the lug and also with one end of a flexible band or chain.

28,482.—RULING OR MARKING DEVICE: *F. Merry.*—The instrument, which is adapted for the use of draughtsmen and others, comprises a grooved revoluble pulley or disc and an ink or colour reservoir, whose orifice, close to the disc, may be controlled by a valve or spring; the colour may also be transferred to the wheel by capillary attraction.

28,583.—BALL AND FLOAT VALVES: *J. Smith.*—In the bore of the pipe above the ball-valve's seat is screwed a small barrel stop-cock, horizontally to turn in a sleeve of rubber or cork, or a small screw-down stop-cock may be vertically screwed into the pipe's bore, to allow the ball-lever and valve to be lifted off their bearings; the ball-lever is in two parts, jointed a few inches from the ball, adjusted either horizontally or vertically; the ball-lever regulator is in two parts and jointed, on its longer arm is fitted a small, half-rounded plate with a slotted curve in it; on the shorter arm, with the ball attached, is fixed a curved arm with a fixed screw to work in the slot of the plate; the pin which takes the ball-lever's bearing is a fixture; by placing the valve on the end of the lever and lowering the ball end, the lever can be adjusted to the pin.

30,078.—CONTRIVANCE SPECIALLY APPLICABLE TO GAS STOVES, HOT AIR STOVES, &c., FOR HEATING DISHES, PLATES, &c.: *J. M. Clarkson.*—Racks and grids are arranged in a frame which has a heating chamber connected to the oven by means of the oven pipe or chimney, the latter being diverted from its customary direction, so that the waste gases or fumes within the oven pipe or chimney may be utilised for the purpose in view.

30,387.—APPARATUS FOR MIXING CONCRETE, &c.: *G. C. Kenyon, C.E.*—A rotating hopper has closed ends and a lengthwise opening, in which the gravel and cement are thoroughly mixed by arms that rotate relatively to the hopper; rotating conveyors are operated through change wheels by the shaft which carries the arms.

30,477.—MANUFACTURE OF SANITARY PIPE TRAPS WITH CURVED ARMS: *T. S. Green and S. Wragg.*—The novelty lies in employing a mould, in two halves, adapted to slide to and fro, combined with a body-core and an arm-core in keyed segments fitting into key ways upon an outer ring and a plain inner ring; the latter ring may be removed by a forked lever or rod, the half moulds carrying spring prirts to prevent egress of clay and to yield to the pressure upon the sides of the die.

30,890.—FLEXIBLE AND ADJUSTABLE RULER FOR USE IN DRAWING CURVES: *G. P. Clark.*—A strip of flexible and resilient material has at each end a loop or hook. The user, by placing his fingers in the loops, can move the ends of the strip or draw them together so as to curve the strip or modify the shape of its curve; for further modifying the curve, is fitted in guides, attached either to the strip or to the hooks or loops, a sliding rod, whose end forms a rigid abutment, adjustable lengthwise with the ruler, for the ruler to be curved upon it as on a fulcrum.

[1,898] 1,377.—SLEEVES FOR PIPE JOINTS: *J. Jones.*—The sleeve is made of a rubber body, which has an outer layer of canvas or other flexible and elastic material having a stretching limit, beads are formed at either end of the rubber body, and the canvas is preferably carried over them.

10,273.—DRAWING COMPASSES: *G. Beach.*—To obviate the use of a screw in fastening the blacklead within the bore of a pair of compasses, the inventor (a schoolmaster) employs a split wedge, which slides up and down into the bore, and grips the lead by pressure between itself and the sides of the bore; the wedge is split into two tongues, thus giving a spring that helps to secure the lead.

11,526.—FIREPROOF WINDOWS: *F. Voigtmann.*—This consists, broadly, of a window having a sheet-metal casing with clenched joints at its corners and elsewhere, which do not need to be soldered, and a fireproof glass, *e.g.*, "wire-glass," set into the sash with metallic fastenings, one of the sashes being hinged and held open by a retaining device to be severed by the heat of a fire.

11,590.—APPARATUS FOR TESTING DRAINS, &c.: *W. H. Hammond.*—A spring is placed inside or outside the tube containing the chemicals in order to ensure their displacement. The tube may be charged with either powder or liquid, and is either broken by hand or exploded by pressure from an air-pump attached to it. By a modification the glass tube and its cover may be dispensed with, capsules of gelatine, &c., being substituted.

14,535.—SLIDE RULES: *L. Rizzoli.*—For the ordinary divisions on the slide's reverse side are substituted values of log-sin., log-tan, and equal parts, the upper edge being marked with divisions for log-sin. A, cos. A along its central line, and along its lower edge with the divisions for log-sin.^{2}A—A's value varying within certain limits for centesimal or sexagesimal graduations. It is claimed that the rule is especially adapted for calculations required in surveys made in tacheometrical methods. We have not space enough for describing its operation, since that could be done only by a chain of intricate details, depending upon the application of various formulæ.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Four Houses, Thornton-road, Morecambe	W. D. Jackson	A. Gorton, Archt. 24, The Crescent, Morecambe	Nov. 29
Sixteen Houses, Mytholmes, near Haworth		Judson & Co. Archt, Keighley	do.
Laundry	Rhondda U.D.C.	W. D. Morgan, Archt. 23, St Mary-st. Cardiff	do.
Two Blocks Shops and Houses, Cavendish-st. Keighley	,,	Judson & Moore, Archt. Keighley	do.
Additions to Manse, Alford, Aberdeen	,,	Jenkins & Marr, C.E. 16, Bridge-st. Aberdeen	do.
Additions to Schools	North Berwick Sch. Bd.	R. Wilson, 3, Queen-street, Edinburgh	do.
*Kerbing, Tar Paving, &c.	Lewisham B. of W.	Surveyor's Dept. Board's Offices, Catford, S.E.	do.
*Brick and Concrete Sewer, &c.	Lewisham B. of W.	The Surveyor, Town Hall	do.
Extension to Town Hall	Blackpool Corp.	Potts & Co. Archt. 29, St. George's-road, Bolton	Nov. 30
Ten Houses, Tunstall-rd. Leeds	,,	F. Mitchell, Archt. 71, Albion-st. Leeds	do.
Additions to Workhouse	Rotherham Union	H. L. Tacon, Archt. 11, Westgate, Rotherham	do.
Four Cottages, Cowling, Yorks.	,,	J. Hartley, Archt. Exchange-buildings, Skipton	do.
Two Villas, Halifax	,,	M. Hall, Archt. 29, Northgate, Halifax	do.
Additions to Workhouse	Barnstaple Union	W. C. Oliver, Archt. Barnstaple	do.
Club, Coldstream, N.B.	,,	W. A. Deas, 3, Tweed-terrace, Coldstream	do.
House, Warlingham, Surrey	Croydon Corp.	Borough Engr. Town Hall, Croydon	do.
Infirmary	Dorking Union	H. P. Adams, Archt. 28, Woburn-place, W.C.	Dec. 1
Additions to 92 Houses, Felling, Durham	,,	Oliver & Leeson, Archt. Newcastle-on-Tyne	do.
Engine House, Midland Mills, Bradford	,,	Jackson & Son, Archt. Bradford	Dec. 2
*Stabling, Derby, &c. &c.	Midland Railway Co.	Co.'s Archt. Cavendish House, Derby	do.
Pair Villas, Rothwell-rd. Halifax	,,	A. G. Dalzell, Archt. 15, Commercial-st. Halifax	do.
*Timber	Romford U.D.C.	The Clerk, Romford, Essex	do.
*Four Shops with Dwellings	,,	J. E. Austin, 22, York-pl. Baker-street, W.	Dec. 3
Bridge, Boss of Garten, N.B.	,,	A. Mackenzie, Surv. Kingussie, N.B.	do.
Additions to Infirmary, Blackburn	,,	Simpson & Duckworth, Archt. Richmond-chmbrs Blackburn	do.
Thirteen Houses, Bradford-street, Keighley	,,	Sugden & Co. Archt. Keighley	do.
Villas, Skircoat, Halifax	,,	Buckley & Son, Archt. Tower-chambers, Halifax	Dec. 5
Twenty-five Houses, Greetland, Halifax	,,	S. Wilkinson, Archt. Sowerby Bridge	do.
Electric Power Station, Dublin	G. N. Ry. Co. (Ireland)	T. Morrison, Sec. Amien's-st. Terminus, Dublin	do.
*Terra Cotta or Artificial Stone	Hull Corp.	A. E. White, Town Hall, Hull	do.
Fire Brigade Station, Chapel-st.	Rugby U.D.C.	D. G. Macdonald, C.E. Rugby	Dec. 6
School, Rosebery-street	Loughborough S.B.	Barrowcliff & Co. Archt. Loughborough	do.
*Supply of New, and Purchase of Old Stores	G. N. Ry. Co.	Mr. Weeks, Stores Superintendent. Doncaster	do.
*Yorkshire Stone	Greenwich B. of W.	Offices, 141, Greenwich-rd. S.E.	Dec. 7
*Chapel, Fencing, and Roads, &c. at Cemetery	Rainham Parish Council	E. J. Dawson, Barking, Essex	Dec. 8
Pair Villas, Ovendon	,,	M. Hall, Archt. 29, Northgate, Halifax	Dec. 9
Electricity Buildings, Beckett-sq.	Barnsley Corp.	J. H. Taylor, C.E. St. Mary's-place	Dec. 12
House and Pavilion, Patricroft	Eccles, Lancs. T.C.	Borough Surveyor, Town Hall	do.
Electric Light Sub-stations	Coventry Corp.	J. E. Swindlehurst, Engr. Coventry	Dec. 13
*Court, Police Cells, and Mortuary	Cty. Boro. of Croydon	Lewis Angell, Town Hall, Stratford, E.	do.
*Brick Sewers, &c.	Mansfield Corp.	R. F. Vallance, Town Hall, Mansfield	Dec. 14
*Refreshment Pavilion, Pryor's Park	Fulham Vestry	C. Botterill, Town Hall, Fulham, S.W.	do.
*Brick Fence Wall	do.	do.	do.
*Removal of Slop	Hampstead Vestry	Surveyor, Vestry Hall	Dec. 15
*Two Chapels at Workhouse, St. Pancras	St. Pancras Guardians	A. & C. Harston, 15, Leadenstreet, E.C.	Dec. 22
*Buildings at Kent College, near Canterbury	Kent Wesleyan Methodist School Assn. Ltd.	C. Bell, 3, Salter's Hall-court. Cannon-st. E.C.	No date
Cottage, Andersonstown, Belfast	R. Britton	W. J. Moore, Archt. Annstreet, Belfast	do.
Parish Room, Barrowby, Grantham	,,	Canon Welby, Barrowby Rectory, Grantham	do.
Re-building Fish and Dolphin Inn, Carlisle	Jennings Bros.	J. Graham, Archt. Bankstreet, Carlisle	do.
Hotel and Shop, Bridge-st. Wrexham	Bate & Son	W. Slater, Archt. 9, Highstreet, Wrexham	do.
Three Houses, Thurnscoe, Yorks.	,,	J. R. Dodds, Sur. 19, Baxter-gate, Doncaster	do.
Hotel, Sedbergh	L. Chorley	J. Hutton, Archt. Kendal	do.
Warehouse, &c. Sunbridge-road, Bradford	,,	W. J. Morley, Archt. 269, Swan-arcade, Bradford	do.
*Alterations to Drainage, &c. School, Leavesden, Watford	St. Pancras Guardians	E. P. Ayres, 14A, High-st. Watford	do.
*Dining Hall, Chapel, &c. Girton College, Cambridge	,,	A. Waterhouse & Son, 20, New Cavendish-st. W.	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
School, Rosebery-street	Loughborough S.B.	Barrowcliff & Co. Archt. Loughborough	do.
*Supply of New, and Purchase of Old Stores	G. N. Ry. Co.	Mr. Weeks, Stores Superintendent. Doncaster	do.
*Yorkshire Stone	Greenwich B. of W.	Offices, 141, Greenwich-rd. S.E.	Dec. 7
*Chapel, Fencing, and Roads, &c. at Cemetery	Rainham Parish Council	E. J. Dawson, Barking, Essex	Dec. 8
Pair Villas, Ovendon	,,	M. Hall, Archt. 29, Northgate, Halifax	Dec. 9
Electricity Buildings, Beckett-sq.	Barnsley Corp.	J. H. Taylor, C.E. St. Mary's-place	Dec. 12
House and Pavilion, Patricroft	Eccles, Lancs. T.C.	Borough Surveyor, Town Hall	do.
Electric Light Sub-stations	Coventry Corp.	J. E. Swindlehurst, Engr. Coventry	Dec. 13
*Court, Police Cells, and Mortuary	Cty. Boro. of Croydon	Lewis Angell, Town Hall, Stratford, E.	do.
*Brick Sewers, &c.	Mansfield Corp.	R. F. Vallance, Town Hall, Mansfield	Dec. 14
*Refreshment Pavilion, Pryor's Park	Fulham Vestry	C. Botterill, Town Hall, Fulham, S.W.	do.
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Parish Room, Barrowby, Grantham	,,	Canon Welby, Barrowby Rectory, Grantham	do.
Re-building Fish and Dolphin Inn, Carlisle	Jennings Bros.	J. Graham, Archt. Bankstreet, Carlisle	do.
Hotel and Shop, Bridge-st. Wrexham	Bate & Son	W. Slater, Archt. 9, Highstreet, Wrexham	do.
Three Houses, Thurnscoe, Yorks.	,,	J. R. Dodds, Sur. 19, Baxter-gate, Doncaster	do.
Hotel, Sedbergh	L. Chorley	J. Hutton, Archt. Kendal	do.
Warehouse, &c. Sunbridge-road, Bradford	,,	W. J. Morley, Archt. 269, Swan-arcade, Bradford	do.
*Alterations to Drainage, &c. School, Leavesden, Watford	St. Pancras Guardians	E. P. Ayres, 14A, High-st. Watford	do.
*Dining Hall, Chapel, &c. Girton College, Cambridge	,,	A. Waterhouse & Son, 20, New Cavendish-st. W.	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in.
*Borough Surveyor	Folkestone Corp.	350*l.* rising to 500*l.* per annum	Nov. 30
*Sanitary Inspector	Fulham Vestry	120*l.* per ann. with uniform	Dec. 3

Those marked with an asterisk (*) are advertised in this Number. ***Competitions, p.*** —. ***Contracts, pp.*** iv. **vi. viii. &** xix. ***Public Appointments, pp.*** xvii. **&** xix.

16,335.—Kilns for Burning Earthenware, Fire-clay Goods, &c.: *R. C. Staley.*—The kiln has one mouth, or more, at each end. From each mouth or burner run a number of diagonal flues underneath the kiln to its opposite sides and ends. The articles to be burnt are protected by an inner wall, between which and the outer walls the heat ascends from the diagonal flues.

17,497.—Fireproofing Composition: *G. H. Dime.*—The composition is made of chloride of ammonia, 15 parts, and microcosmic salt, 1 part, used generally as a solution; 1 part of borate of sodium, or of borate of potassium, may be advantageously added; with celluloid, it is used, dry or powdered, in the ratio of about one-fourth in weight of the substance of which the celluloid is made.

18,210.—Bricks or Blocks for Building: *H. T. Grainger.*—Each block has a deep lengthwise groove in its two opposite sides or ends, one grooved side and one adjacent end have keyways or grooves, the other side and adjacent ends have ridges or keys, or all the grooved sides and ends of some of the bricks may have keyways, and all the grooved sides and ends of others may have ridges or keys; the ridges and keys fit into the keyways, and the grooves form continuous air passages within the walls of the structure when built.

18,302.—Artificial Asphalt and Its Manufacture: *J. W. Hayward.*—Ground limestone or a similar mineral or equivalent material, say 20 to 60 per cent., is added to petroleum residue, preferably before the oxidising process; the retort containing the mixture is heated to the required temperature, and whilst the mixture is in a heated condition air is admitted under pressure, and diffused through the material to rapidly oxidise it, and make it consistent in suostance; the retort is rotated on a stationary hollow shaft through which the air is forced, the shaft having hollow branches or arms to serve as agitators and scrapers through which the air passes into the material.

18,684.—Wire Fence Machines: *A. H. Cook, J. G. Bruce, & Christine Bruce.*—To dispense with supplemental brackets or clips the inventors have contrived (*a*) two vertical bars, fitted with brackets secured at the inner end between them by clamps, the wires being held in loops on the outer ends of the brackets: and (*b*) twisting devices for the vertical wires.

18,942.—Roofing: *A. Allen.*—For joining the vulcanite, wood, cement, and other roof fittings to the walls, gutters, &c., without lead or zinc, and increasing the strength of the roofing, a sheet of wire or other woven fabric is inserted between the layers of felt, asphalt, or paper sheet and vulcanite, wood, cement, or other composition; n construction the sheet and fabric can be turned up the face of the wall, or be built in; gravel kerbs are dispensed with by adopting an iron kerb at whose bottom edge is a flange to prevent the roofing composition from running into the gutter; if the gutter is on the outside of a wall the water outlets are protected by a kerb made of earthenware.

19,916.—Mills for Grinding Mortar: *E. Chatham.*—The essential features of the invention consist of the combination, with a circular toothed rack on the pan, of gearing by which the pan can be driven by manual or by other power, and of making the mill portable for convenient use when small buildings are being erected, steam or other motive power not being available.

19,920.—Pipe-Joint or Coupling: *J. S. & J. S. Clinch.*—For soft metal tubes, the device (also applicable to pipes of other metals, and to hose) has internal coned or tapered rings, over which fit the expanded or tapered ends of the pipes, annular internally threaded rings outside the aforeside rings, and annular wedges or glands to screw into the external rings, the internal inclined part of the wedges pressing upon the outside of the tapered pipe-ends.

New Applications.

November 7-12.

23,346, E. S. Bond, Carriage and Storage of Carbide of Calcium. 23,349, Underwood & Bateman, Parallel Vice. 23,352, F. D. Mellor, and 23,707, H. Swanton, Oil Cans, &c. 23,354, S. Mendel, Burglar and Fire Alarm. 23,363, H. Kinsey, 23,576, F. W. Smith, and 23,675, De Thiersant & Coulson, Generation of Acetylene Gas. 23,364, C. H. Collins, Panels for Decorative and Protective Purposes. 23,376, J. Buzzard, Labour-saving Drum Hoist. 23,382, F. Beauchamp, Mechanical Device for Screens, Partitions, &c. 23,388, J. B. Reiner, 23,397, Lewis and Others, and 23,533, C. E. Hartham, Electrical Arc Lamps. 23,389, S. Sapy and Others, Water Meters. 23,394, Smith & Forch, Saw Handles. 23,401, J. Ball, Coupling Link for Chains, Warps, Ropes, &c. 23,407, Propfe, Crushing, Grinding, and other Mills. 23,433, C. Vermer, Electrical Arc Lamp Cut-outs. 23,437 and 23,902, G. E. Bourgoin, Soldering Aluminium and its Alloys. 23,438, R. Allan, Window Lock. 23,446, T. F. A. Ash, Refuse Gatherer. 23,454, Deys, Time Recorders. 23,466, J. D. Johnson, and 23,751, R. Jones, Circular Saw Guards. 23,485, J. W. Gillie, "Artificial Horizon." 23,489, G. C. Brown, junior, Hinged Sliding Window Sashes to open inwardly. 23,508, T. Potter, Construction of Fireproof Buildings. 23,511, Berger & Glardon-Jaquet, Wood-turning Chisel. 23,512, Cliff & Jones, Combined Water Supply Connexions and Hose Reels. 23,513, J. F. Ward, Rope Traction Conveying and Hoisting Apparatus. 23,525, Seagrave & Bevington, Heating and Drying Apparatus. 23,526, H. Woods, Devices for Automatically Closing Doors, &c. 23,529-31, C. M. Green, Electrical Energy Generation and Distribution. 23,543, P. G. L. Stuhlmann, Grooved Tiles. 23,547-8, S. Simpson, Governors for Gas and other Fluids; and Turret Lathes, &c. 23,550, E. V. Camis, Artistic Decoration for Walls and other Surfaces. 23,551, R. Pearson, "Protection of Warehouses [*sic*] and other Windows for Preventing the Spread of Fire." 23,558, Ovens & Hanman, Cutter Bar or Tool-holding Device for Lathes, &c. 23,561, W. T. Rounsivell, Portable Lift or Loading Platform. 23,565, A. E. Rogers, Map and Diagram Holder. 23,566, S. B. McGregor, "Fire and Frost Thermometer." 23,573, R. Ewing, Earthenware Pipe Joints. 23,593, H. Chapman, Continuous to Alternating Electrical Current Transformer. 23,598, C. E. McCay, Window Fastener. 23,605, T. Rogers, Swinging Lamps for Tip Carts, Wagons, &c. 23,612, Bounevialle & Watson, Holders for Paint Brushes, &c. 23,615, Farbwerke Mühlheim. Colouring Matters. 23,619, R. J. H. Fox, Lifts or Elevators. 23,621, E. Sinclair, Copying Drawings, &c. 23,633, M. Cassart, Heating Apparatus. 23,652, J. B. Atkinson, Manufacture of Bricks, Tiles, Pipes, &c., from oil shale. 23,661, J. McGinnes, Smoke-curer and Ventilator. 23,667, Priest and Millward, Hoisting Apparatus. 23,668, Brown & Naylor, Grates for the inside Fireplace or Range of Register Stoves and Kitchen Ranges. 23,680, W. Rowthorn, Patternmaker's Wood Screw and Skewer. 23,685, A. Levis, Flushing Cisterns. 23,686, G. Nobes, Gas Cut-off for use in case of fire. 23,702, J. W. Pattison, Treatment of Asphalte. 23,703, H. Davison, White Lead, &c. 23,705, L. Klein, Flushing Apparatus. 23,724, Mountford and Others, Coloured Decoration of Pottery. 23,740, W. Tapp, Seats for Outdoor Use. 23,753, J. A. Fleming, Electrical Measuring Instruments. 23,754, Louisa M. Cooper, Handle or Stock Fastening. 23,757, Lord and Butterworth, Dust, Draught, and Weather Excluders. 23,758, P. S. Brown, Multiple Ply Veneer and Roofing Plates, &c., made thereof. 23,777, T. H. Ash, Tanks or Vessels of Various Metals and Alloys. 23,779, A. J. L. Haverkamp, Handles and Holders for Tools. 23,784, W. A. A. Röper, Registering Devices for Lifting and Hoisting Apparatus. 23,792, W. H. Doyle, Flushing Valves. 23,812, N. Cloutier-Colson, Pipe Jointing. 23,813, H. Norris, Colouring Glass and Metal Surfaces for Decorative Purposes in Buildings, &c. 23,814, J. Martin, Window Sashes. 23,824, I. Hultman and Others, Calculating Machine. 23,835, A. B. Wilson, Water Purifier. 23,841, J. B. Reid, Brake Apparatus for Electrically-driven Cranes, &c. 23,843, J. Scott and Others, Antiseptic Compound to be Laid on Floors. 23,851, Elizabeth A. Davies, Adjustable Spout. 23,856, G. Morgan, Glazed Tiles and Bricks. 23,860, R. Mason, Reversible Windows, and ventilation thereby. 23,882, R. D. Shannon, Wood-Moulding Cutter. 23,884, J. Cope, Metal and Other Castings. 23,899, E. W. S. Deane, Cabinets, Chests of Drawers, &c. 23,900, H. Valder, Weighing Machine Scales, &c. 23,905, C. Koenig, Combined Screw-Wrench and Adjustable Turn-Screw. 23,907, G. F. Sturgess, Right and Left Transfer Needle. 23,908, Glovers, Padlocks, Locks, and Similar Fasteners.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

November 4.—By Rushworth & Stevens.

Hornsey Rise.—19, Ormond-rd., a freehold building site £215

By G. Ravenshear.

Greenwich.—9 and 11, Crooms Hill, f., r. 80*l.* 1,090

By Waters & Rawlence (at Bishopstoke).

Bishopstoke, Hants.—Main-rd., two plots of building land, f. 260

Bow Mead, 5 a. 0 r. 32 p., f. 280

Fairoak, Hants.—Two enclosures, 4 a. 1 r. 28 p. f. 200

Owslebury, Hants.—Crowd Hill Farm, 56 a. 3 r. 16 p., f. 1,200

By Dyer, Son, & Hilton (at Lewisham).

Greenwich.—61 to 71 (odd), Chester-st., u.t. 20 yrs., g.r. 15*l.* 500

8, John-st., u.t. 36 yrs., g.r. 2*l.* 145

November 7.—By Climpson & Johnson.

Balham.—95 and 97, Ramsden-rd., f., e.r. 72*l.* 950

Nunhead.—62, Evelina-rd., u.t. 75 yrs., g.r. 4*l.* 10*s.* 275

By G. A. Wilkinson & Son.

Walworth.—366 and 368, Walworth-rd, u.t. 63½ yrs., g.r. 20*l.*, r. 126*l.* 1,80

By Woods & Snelling.

New Cross.—Cottesbrook-st., a plot of building land, f. £2,140
Silvertown.—17 to 23 (odd), Eastwood-rd., u.t. 80 yrs., g.r. 15*l.* 275
1 and 3, Eastwood-rd., u.t. 80 yrs., g.r. 7*l.* 10s.. 150
Fulham.—3, 5, and 7, Everington-st., u.t. 80 yrs., g.r. 16*l.* 10s. 600
Chiswick.—43, 45, and 47, Bolton-gardens, u.t. 82½ yrs., g.r. 18*l.* 18s., r. 84*l.* 665

By Leopold Farmer.

Brondesbury.—81, 93, and 97, Brondesbury-villas, u.t. 66½ yrs., g.r. 31*l.* 10s., r. 162*l.* 10s.. 1,360
Brondesbury-villas, a plot of building land, u.t. 81 yrs., g.r. nil 360
121, 127 and 129, Brondesbury-rd.; also Clarence House, u.t. 81 yrs., g.r. 39*l.*, r. 200*l.*.... 2,000
2, Halse-ter., u.t. 81 yrs., g.r. 9*l.*, r. 48*l.* 440
10 and 11, Halse-ter. u.t. 67 yrs., g.r. 21*l.*, r. 93*l.* 870

By Debenham, Storr, & Sons (at Reading).

Reading, Berks.—25, West-st., f., r. 63*l.* 1,425
Oxford-rd., Roxburgh House, f., r. 50*l.*..... 1,060
Erleigh-rd., West View House, f., r. 24*l.* 475
51, Market-place, f., r. 80*l.* 1,850

November 8.—By Thurgood & Martin.

South Kensington.—76, Cromwell-rd., u.t. 58 yrs., g.r. 2*l.* 3,000
Clapham.—King's-rd., "Meaburn," f. 1,900

By Messrs. Foster.

Notting Hill.—94, Ledbury-rd., u.t. 48 yrs., g.r. 8*l.*, r. 50*l.*..... 355

By Rogers, Chapman, & Thomas.

South Kensington.—24, Stanhope-gardens, u.t. 52½ yrs., g.r. 5*l.*, r. 210*l.*..... 2,400
53, Onslow-sq., u.t. 31½ yrs., g.r. &c. 5*l.*, e.r. 200*l.* 2,220
Fulham.—138 to 146 (even), North End-rd., area 2,500 ft., c. 1,260
Streatham.—2 and 4, Colmer-rd., u.t. 67½ yrs., g.r. 6*l.* 430

By Weston & Sons.

Clapham.—97 and 99, Dorset-rd., and 12, Kibworth-st., c., r. 87*l.* 10s. 1,050
Lewisham.—19, Avenue-rd., f. 330
Catford.—1 to 10, Waterloo-pl., f. 895

By Fleuret, Sons, & Adams (at Masons' Hall Tavern).

Brighton.—St. James'-st., "The St. James' Hotel," u.t. 16 yrs., r. 140*l.*, with goodwill .. 8,010

November 10.—By C. C. & T. Moore.

West Ham.—Dirleton-rd., f.g.r. 18*l.*, reversion in 99 yrs. 420
Notting Hill.—132, Portland-rd., u.t. 53½ yrs., g.r. 10*l.* 190
Bow.—7, Avenue-rd., u.t. 33½ yrs., g.r. 4*l.* 4s., e.r. 32*l.* 295

By Newbon, Edwards, & Shephard.

Stoke Newington.—74, Walford-rd., u.t. 64 yrs., g.r. 6*l.*, r. 45*l.*..... 460
Hoxton.—10, Shaftesbury-st., u.t. 32½ yrs., g.r. 10*l.* 10s., r. 26*l.* 145
Teddington.—20 to 24, Somerset-rd., u.t. 80 yrs., g.r. 30*l.*, r. 104*l.*..... 520
Hoxton.—5, Cropley-st., u.t. 43½ yrs., g.r. 7*l.*, e.r. 32*l.* 200
Islington.—13, 15, and 17, Oxford-rd., u.t. 18½ yrs., g.r. 6*l.* 15s., r. 99*l.*..... 510
19, 21, and 23, Oxford-rd., u.t. 7½ yrs., g.r. 27*l.* 180
Hackney.—91, King Edward's-rd., u.t. 40½ yrs., g.r. 10*l.*, e.r. 45*l.* 360
Islington.—3, Liverpool-rd., f.g.r. 10*l.*, reversion in 10½ yrs. 550
Kentish Town.—Fortress-grove, &c., i.g.r. 67*l.* 10s.; also stabling premises in Fortress Mews, r. 60*l.*, u.t. 23½ yrs., g.r. 17*l.*..... 800

By Stimson & Sons.

Camberwell.—6 to 17, 19, and 21, Victory-sq., u.t. 81½ yrs., g.r. 73*l.* 10s. 3,060
82, 84, 86, and 88, Westmacott-st., f., r. 114*l.* 8s. 1,400
Lambeth.—89 to 92, Cornwall-rd, u.t. 24 yrs., g.r. 18*l.* 14s..... 870
Sydenham.—13 to 23 (odd), Knighton Park-rd., u.t. 948 yrs., g.r. 54*l.*, r. 186*l.* 1,900
Wood Green.—20, Lander-ter., u.t. 67½ yrs., g.r. 6*l.*, r. 27*l.*..... 255
Notting Hill.—22, 23, and 24, Norland-rd., u.t. 68 yrs., g.r. 24*l.*, r. 155*l.* 1,240
79, Lansdowne-rd., u.t. 53 yrs., g.r., &c., 17*l.* 2s., r. 75*l.* 425
Fulham.—98, Lillie-rd., and 5, Bramber-rd., f., r. 100*l.* 1,710
Stoke Newington.—3, Truman's-rd., u.t. 74 yrs., g.r. 5*l.* 10s., r. 30*l.*..... 315
7, Hayling-rd., u.t. 74 yrs., g.r. 5*l.* 10s., r. 28*l.*.. 260
Ball's Pond.—25, Wall-st., u.t. 30 yrs., g.r. 4*l.*..... 220
Bermondsey.—25 to 34, Enid-st., u.t. 18 yrs., g.r. 24*l.* 1,240
Kennington.—47 and 51, Walcot-sq., u.t. 9 yrs., g.r. 12*l.* 12s..... 185
Dockhead.—122, Tanner-st., u.t. 10 yrs., g.r. 5*l.*, r. 45*l.* 150

By Barker & Neale.

Hyde Park.—31, Albert Gate, u.t. 21 yrs., g.r. 200*l.* 450

By Douglas Young & Co. (at Cannon-street Hotel).

Salisbury and Devizes (near), Wilts.—The freehold estates of Mr. E. Terah Hooley, area 10,913 acres, with advowsons 98,000
Ashdon, &c., Essex.—The Ashdon and Radwinter Estate, area 3,245 acres, f., with manors and advowsons 39,500
Finchingfield, Essex.—The Hook Farm, 30 a. 1 r. 15 p., f. 240

By Flood & Sons (at Paddington).

Paddington.—122 and 124, Portnal-rd., u.t. 89 yrs., g.r. 14*l.*, r. 86*l.* 985

By Worsfold & Hayward (at Dover).

Dover, Kent.—Clarendon-st., a plot of building land, f. 155
Snargate-st., "The Ordnance Arms" p.-h., f., r. 36*l.*..... 800
150, Snargate-st., f., r. 35*l.* 520
58 and 60, Wyndham-rd.. u.t. 998 yrs., g.r. 4*l.* 285
Ewell, Kent.—Pond Close Nursery, area 1 a. 2 r. 21 p., f. 690

By Hooker & Webb (at Croydon).

Croydon.—7 and 9, St. John's Grove, f., r. 58*l.* .. 860
35, Dennett-rd., f., r. 26*l.* 295

November 11.—By Messrs. Cobb.

Rotherhithe.—Rotherhithe-st., &c., a freehold rent charge of 132*l.* per annum 3,500

By H. V. Chew.

Leytonstone.—606, High-rd., f., r. 32*l.* £570
98, Hainault-rd., f., r. 32*l.* 525

By G. Herbert-Burns.

Spitalfields.—30, Lamb-st., f., r. 48*l.* 1,070
Hampstead.—62, South Hill-park, f., e.r. 65*l.* 865
Dulwich.—103, Friern-rd., f., r. 30*l.* 450

By Toplis & Harding.

Twickenham.—5, Waldegrave-ter., f., r. 20*l.* 325
6, Waldegrave-ter., and a plot of building land, f., r. 40*l.* 500

By Wagstaff & Sons.

Canonbury.—1, Clephane-rd., u.t. 46¾ yrs., g.r. 8*l.* 510

By Edward Wood.

Leyton.—65, Grange Park-rd., f., e.r. 35*l.*..... 420
Hackney.—75, Frampton Park-rd., u.t. 40½ yrs., g.r. 6*l.*, r. 38*l.*..... 305
Holloway.—296, Hornsey-rd., u.t. 52½ yrs., g.r. 10*l.*, r. 40*l.* 340
Norwood.—2, Linton-ter., u.t. 34 yrs., g.r. 8*l.*, e.r. 28*l.*..... 150
Tooting.—71, Defoe-rd., u.t. 79½ yrs., g.r. 5*l.*, r. 24*l.*..... 280
Battersea.—1 to 7, Bewick-st., u.t. 78 yrs., g.r. 40*l.*..... 1,790

By Messrs. Wickenden (at Tunbridge Wells).

Tunbridge Wells, Kent.—31, 33, and 45 to 59 (odd), Mount Zion, f., r. 335*l.* 5,790
2 to 16 (even), Berkeley-rd., f., r. 244*l.* 4,100
1 to 9, Brunswick-ter., also Brunswick House, f., r. 273*l.*..... 4,750
Vale Avenue, Home Crest, f., r. 95*l.* 1,650

November 12.—By Troughton Thompson (at Kendal).

Cartmel Fell, Lancs.—Goswick Hall Estate, 59 a. 3 r. 27 p., f..... 2,107

November 14.—By Driver & Co.

Fulham.—10, 12, 28, and 34, Lilyville-rd., u.t. 80 yrs., g.r. 32*l.*, r. 146*l.* 1,250
Maida Vale.—79, Warrington-cres., u.t. 74½ yrs., g.r. 10s., r. 120*l.*..... 1,325
137 to 145 (odd), Portsdown-rd., u.t. 73 yrs., g.r. 10*l.*, r. 362*l.* 10s. 3,580

By Beale & Capps.

Notting Hill.—St. Charles'-sq., f.g.r. 11*l.*, reversion in 75 yrs. 330
Peckham.—Braemar Villas, f.g.r. 10*l.*, reversion in 97 yrs. 260
Thames Ditton, Surrey.—1 to 7, Douglas-ter., f., r. 186*l.* 2,100

By Flood & Sons.

Paddington.—79, Westbourne Park-villas, u.t. 38 yrs., g.r. 10*l.*, e.r. 50*l.* 405
Marylebone.—39, 40, and 41, Stafford-st., u.t. 21 yrs., g.r. 54*l.* 525

By J. & R. Kemp & Co.

Hoxton.—15, Felton-st., f. 270
15, Eagle Wharf-rd., u.t. 32 yrs., g.r. 11*l.*, r. 55*l.*..... 410

By William Houghton.

Walthamstow.—High-st., Holly Bank and Fairlawn, f., r. 87*l.* 10s. 2,700
Lea Bridge-rd., an improved rental of 58*l.* for 45 yrs. 780
35 and 37, Orford-rd., f., r. 32*l.*..... 830
Lea Bridge-rd., "The Volunteer" and cottage adjoining, f. (including mortgage)..... 850
South Kensington.—27, Onslow-sq., u.t. 31½ yrs., g.r. 5*l.* 1,825

By Graves & Son (at Westbourne Park).

Westbourne Pk.—18, Woodfield-pl., u.t. 63½ yrs., g.r. 6*l.*, e.r. 38*l.*..... 360

November 15.—By Fuller & Fuller.

Marylebone.—96, Boston-pl., u.t. 22 yrs., g.r. 4*l.* 135

By E. H. Henry.

Battersea.—21, Northcote-rd., u.t. 81½ yrs., g.r. 12*l.* 10s., r. 70*l.* 900

Contractions used in these lists.—**F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.**

PRICES CURRENT OF MATERIALS.

TIMBER.

Greenheart, B.G.	ton	8/0/0 0/0/0
Teak, E.I....	load	10/10/0 15/10/0
Sequoia, U.S.ft.cu.		1/9/0 2/1/0
Ash, Canada, load		3/15/0 5/0/0
Birch, do.....		3/10/0 5/10/0
Elm, do.....		4/10/0 5/10/0
Fir, Dantsic, &c..		2/15/0 4/15/0
Oak, do.....		2/2/6 4/2/6
Canada		4/2/6 6/0/0
Pine, Canada red		0/0/0 0/0/0
Do. yellow		4/2/6 6/0/0
Lath, Dantsic, fath		4/10/0 5/10/0
St. Petersburg..		4/0/0 6/10/0
Wainscot, Riga, &c., log.....		4/15/0 6/5/0
Odessa, crown....		4/15/0 6/5/0
Deals, Finland 2nd & 1st std 100		9/5/0 9/15/0
Do. 4th & 3rd ..		9/5/0 9/15/0
Do. Riga		7/15/0 8/15/0
St. Petersburg, 1st yellow		11/5/0 13/15/0
Do. 2nd yellow.		10/5/0 11/15/0
Do. white		9/5/0 11/5/0
Swedish		9/5/0 16/5/0
White Sea		10/5/0 17/10/0
Canada, Pine 1st		18/0/0 24/10/0
Do. do. 2nd		13/0/0 16/10/0
Do. do. 3rd, &c.		6/0/0 9/10/0
Do. Spruce, 1st		8/10/0 10/10/0
Do. do. 3rd and 2nd		7/0/0 8/10/0
New Brunswick		7/0/0 8/0/0
Battens all kinds		5/0/0 16/0/0
Flooring boards, sq., 1 in. prep. 1st.....		9/0 16/3
Do. 2nd		c/8/3 0/13/3
Other qualities—		6/6 7/0
Cedar, Cuba, ft.		/4 /4½
Honduras, &c.		/3½ /4½
Mahogany, Cuba		/5½ /7
St. Domingo, cargo av.		/5 0/1/3
Mexican, do. do.		/3½ /4
Tobasco, do. do.		/4 /6½
Honduras, do.		/4 /6
Box, Turkey, ton		4/0/0 15/0/0
Rose, Rio		7/0/0 14/0/0
Bahia		6/0 0 12/0/0
Satin St. Doming.		0/0/5 0/1/0

TIMBER *(continued)*.

Satin, Porto Rico	0/0/9	0/2/0
Walnut, Italian ..	0/0/3	0/0/7

METALS.

Iron—Pig, in Scotland .....ton	2/9/11	0/0/0
Bar, Welsh, in London	6/0/0	6/5/0
Do. do. at works in Wales	5/15/0	5/17/6
Do. Staffordshire, in London.....	6/5/0	7/10/0
Copper—British cake and ingot	59/15/0	60/5/0
Best selected ..	60/10/0	61/0/0
Sheets, strong..	64/0/0	65/10/0
Chili bars	59/3/9	0/0/0
Yellow Metal, lb.	5d.	5⅛d
Lead—Pig		
Spanish ....ton	13/10/0	0/0/0
English com. bands	13/15/0	0/0/0
Sheet, English 6 lbs. per sq. ft. and upwards ..	14/15/0	0/0/0
Pipe.....	15/5/0	0/0/0
Zinc—English sheet.....ton	28/0/0	0/0/0
Vieille Montagne	20/15/0	0/0/0
Spelter	24/10/0	24/15/0
Tin—Straits	80/11/3	0/0/0
Australian.....	81/5/0	81/15/0
English Ingots..	83/10/0	84/10/0
Banca	0/0/0	0/0/0
Billiton	0/0/0	0/0/0

OILS.

Linseed .....ton	26.5.0	0/0,0
Cocoanut, Cochin	27/15/0	0/0/0
Do. Ceylon	24/10/0	0/0/0
Palm, Lagos	21/15/0	0/0/0
Rapeseed, English pale	22/15/0	0/0/0
Do. Brown	21/5/0	0/0/0
Cottonseed ref. ..	15/0/0	16/0/0
Oleine.....	17/0/0	18/0/0
Lubricating U.S.	0/5/3	0/7/6
Do. Black	0/5/0	0/6/6
Tar — Stockholm barrel	1/5/0	0/0/0
Archangel.....	0/18/0	0/0/0
Turpentine	28/5/0	0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100 unless in some exceptional cases and for special reasons.]

ABERBEEG.—For the erection of school buildings, Six Bells, for the Llanhilleth School Board. Messrs. Swash & Bain, architects, Midland Bank-chambers, Newport, Mon. Quantities by the architects:—

C. Jenkins & Son	£2,225	D. Jones	£2,065
W. Morgan	2,200	W. F. Morgan	2,057
C. H. Reed	2,100	W. Phillips	2,050
D. Lewis, Llanhilleth*	2,070	Mainwaring & Davies	1,950

* Accepted.

ALCESTER.—For the erection of a workhouse infirmary, for the Union Guardians. Mr. W. H. Ward, architect, Paradise-street, Birmingham. Quantities by Mr. W. H. Elsmore, London:—

J. G. Fincher & Co.	£7,500	J. Smallwood & Co.	£6,107
J. Atkinson	6,789	Gowing & Ingram	6,049
B. Whitehouse & Sons	6,693	W. Robinson	5,951
Lindsey Jones	6,498	G. Huxley, Redditch*	5,757
Huins	6,300		
Smith & Pitts	6,250		

* Accepted.

BARNSLEY.—For the erection of seven houses, Doncaster-road. Messrs. Wade & Turner, architects, 10, Pitt-street, Barnsley. Quantities by the architects:—

Building.—Elliott Moorhouse, Barnsley	£983	0
Joinery.—Wm. Hammerton's executors, Worsbrodale	350	0
Slating.—Miss M. Fleming, Barnsley	93	15
Plumbing.—William Dransfield, Barnsley	85	5
Plastering.—John Shaw, Barnsley	105	0
Painting.—Stephenson & Son, Barnsley	30	0

BECKENHAM.—For the execution of paving works, Beckenham and Elmers End roads, for the Urban District Council. Mr. J. A. Angell, Surveyor, Council's Offices, Beckenham:—

G. Wilson	£643 12 0	E. Iles, Mitcham Common (accepted)	£472 19 8
J. Mowlem & Co.	479 0 0		

CHELMSFORD.—For erecting a pair of cottages, Legg-street. Mr. R. Mawhood, architect:—

F. Johnson	£560	H. Potter*	£500
W. Fincham	500		

* Accepted.

CHELMSFORD.—For erecting a pair of cottages, Springfield Park Estate. Mr. R. Mawhood, architect:—

Samms	£526	Ely*	£450
Gowers	495		

* Accepted.

[All of Chelmsford.]

CHELMSFORD.—Accepted for forming, &c., new roads and footpaths, Waterhouse building estate. Mr. C. Pertwee, surveyor, Bank Chambers, Chelmsford:—

R. A. Bonnett & Co., Baddow-road, Chelmsford £320

CROMER.—For the erection of public conveniences, for the Urban District Council. Mr. A. F. Scott, Surveyor, Council's offices, Cromer. Quantities by Surveyor:—

Buildings.

R. Daws & Son	£1,950 0	G. A. Lines	£1,432 3
J. Youngs & Son	1,592 0	J. S. Smith, City-road, Norwich (accepted)	1,533 15
G. E. Hawes	1,565 14		
T. Gill	1,495 0		

Sanitary Fittings.

Geo. Jennings	£312 18 2	Doultons & Co.	£219 18 0
Shanks & Co.	234 14 10	Adams & Co.	212 12 3
G. B. Davies	233 9 0	Twyfords & Co., Hanley and London*	175 0 0
B. Finch & Co.	223 0 0		
F. Barber & Co.	220 12 10		

* Accepted.

LAUNCESTON.—For the erection of a cattle market, &c., for the Town Council. Mr. Otho B. Peter, architect, Launceston:—

E. Sharland	£3,389	J. Broad	£3,153
R. Burt	3,250	Nankivell & Sons	3,028
R. Waill	3,183		

LEEDS.—Accepted for the erection of two mortuaries to chapels at Holbrook Cemetery, for the Corporation:—

Wade Brothers, Woodhouse-lane, Leeds..... £414 16

LEYTON.—For the erection of two houses, Francis-road, Leyton, for Mr. J. J. Lara:—

H. Hood	£1,591	Camp*	£840
J. Haydon	1,548		

* Accepted.

LONDON.—For pulling down and rebuilding No. 2, Duke-street, Manchester-square, W., for Mrs. Brooks. Mr. Alfred J. Hopkins, architect, 37, Mortimer-street, W.:—

Keary & Hollick	£3,235	Cowley & Drake	£2,825
Webber	3,100	Sanders	2,825
Beer & Gash	3,049	Lole & Lightfoot, Trafalgar-square, Chelsea, S.W.*	2,773
Davenhill	2,950		
Spreckley & Co.	2,927		
Faulkner & Co.	2,883		

* Accepted.

LONDON.—For the supply and erection of boilers and fittings at the Western Pumping Station, for the London County Council:—

J. Musgrave & Sons, Ltd.	£3,717	J. & J. Horsfield	£3,250
J. Thompson	3,503	R. Taylor & Sons	2,880
W. Arnott	3,423	E. Danks & Co., Ltd.	2,775

LONDON.—For alterations at the "Magnet," Old Kent-road. Mr. John Hamilton, architect:—

Irwin	£1,389	Snewin Bros. & Co.	£1,098
Whitehead & Co.	1,123		

LONDON.—For alterations at "The Mitre," Edgware-road. Mr. G. G. Pye, architect:—

Rhodes	£1,540	Bennett	£1,363
Snewin Bros. & Co.	1,521	Waymouth	1,123

LONDON.—For cast-iron lamp columns for the Hornsey District Council. Mr. E. J. Lovegrove, Engineer and Surveyor :—

	Per ton		Per Ton.
E. Stevenson	£14 0 0	Newton, Chambers & Company	8 0 0
Moorgate Engineering Company	10 0 0	Jukes, Coulson, Stokes, & Co.	7 17 6
T. Howden & Sons	9 9 0	John Needham	7 15 0
Stanton Iron Works	9 0 0	Gibb & Co.	7 5 0
J. Shaw & Co.	9 0 0	Pontifex & Co., Coleman-street*	7 3 6 Each.
Rowland, Carr, & Co.	8 13 0	G. Smith & Co.	1 19 0
F. Bird & Co.	8 10 0	T. E Kershaw	1 9 0
J. B. Hollom & Co.	8 4 0		
H. & G. Measures	8 0 0		

* Accepted.

LONDON.—For constructing new road through Queen's Wood, Highgate, for the Hornsey District Council. Mr. E. J. Lovegrove, Engineer and Surveyor :—

W. Langridge	£3 978	Killingback & Co.	£3,500
H. Clark	3,976	Pedrette & Co.	3,499
W. Griffiths	3,651	W. Walker	3,464
E. T. Bloomfield	3,593	R. Ballard, Lim.	3,458
W. T. Williamson & Sons, Lim.	3 577	T. Adams	3,367
C. Ford	2,508	J. A. Dunmore, Crouch End*	3,278

* Accepted.

LONDON.—For cast-iron telephone pipes and pit covers, for the Hornsey District Council. Mr. E. J. Lovegrove, Engineer and Surveyor :—

	Pipes per ton.		Pipes per ton.
H. & G. Measures	£12 0 0	Jukes, Coulson, Stokes, & Co., 11, Clements-lane, E.C.*	£6 5 0
Pontifex & Co.	7 0 0	Newton, Chambers, & Co.	—
Stanton Ironworks Co.	6 18 6	Gibb & Co.	6 3 4
Hollom & Co.	6 10 0		
Bird & Co.	6 5 0		

	Covers each.		Covers each.
Stanton Ironworks Co.	£1 17 6	Bird & Co.	£1 6 4
Newton, Chambers, & Co.	1 17 6	Jukes, Coulson, Stokes, & Co., 11, Clements-lane, E.C.*	1 3 9
Pontifex & Co.	1 10 0	H. & G. Measures	1 3 0
Hollom & Co.	1 7 0		
Gibb & Co.	1 7 0		

* Accepted.

LONDON.—For wrought-iron tree-guards, for the Hornsey District Council. Mr. E. J. Lovegrove, Engineer and Surveyor :—

	Per Tree-Guard.		Per Tree-Guard.
Caversham Studio	£1 3 0	Gibb & Co	£0 8 6
Newton, Chambers, & Co.	0 15 0	Hill & Smith	0 8 6
Beck & Co.	0 14 0	Pontifex & Co.	0 8 3
Jukes, Coulson, Stokes, & Co.	0 9 6	Hollom & Co.	0 8 2
Bayliss, Jones, & Bayliss	0 8 9	Raybould & Co.	0 8 0
Hayward & Sons	0 8 9	Priest & Son	0 8 0
		Neville & Co.	0 7 9
		M. McVey	0 7 9

	For 100 Tree-Guards		For 100 Tree-Guards
Miller & Sons	£75 0 0	J. Etwell, Sheepcote-street, Birmingham*	£36 5 0
Henry Lobnitz	£70 0 0		

* Accepted.

LONDON.—For new laboratory, &c., at Millwall, for the Electrical Power Storage Company, Limited. Mr. Alfred Roberts, architect, 18, Nelson-street, Greenwich, S.E. :—

Jones & Groves	£1,681	W. Mills	£1,502
T. D. Lang	1,608	Windsor & Co.	£1,345
Jerrard & Sons	1,573		

LONDON.—For alterations, additions, and dilapidations at No. 51, Leytonstone-road, Stratford, E., for Mr. G. Potter. Mr. Fred. A. Ashton, architect, 177, Romford-road, Stratford, E. :—

W. G. Maddison	£878	A. E. Symes	£800
J. & H. Cocks	847	C. North	793

LLANELLY.—For the erection of a school at Pontyberem, for the Llanelly School Board. Mr. J. B. Morgan, architect, New-road, Llanelly :—

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[Architect's estimate, £1,250.]

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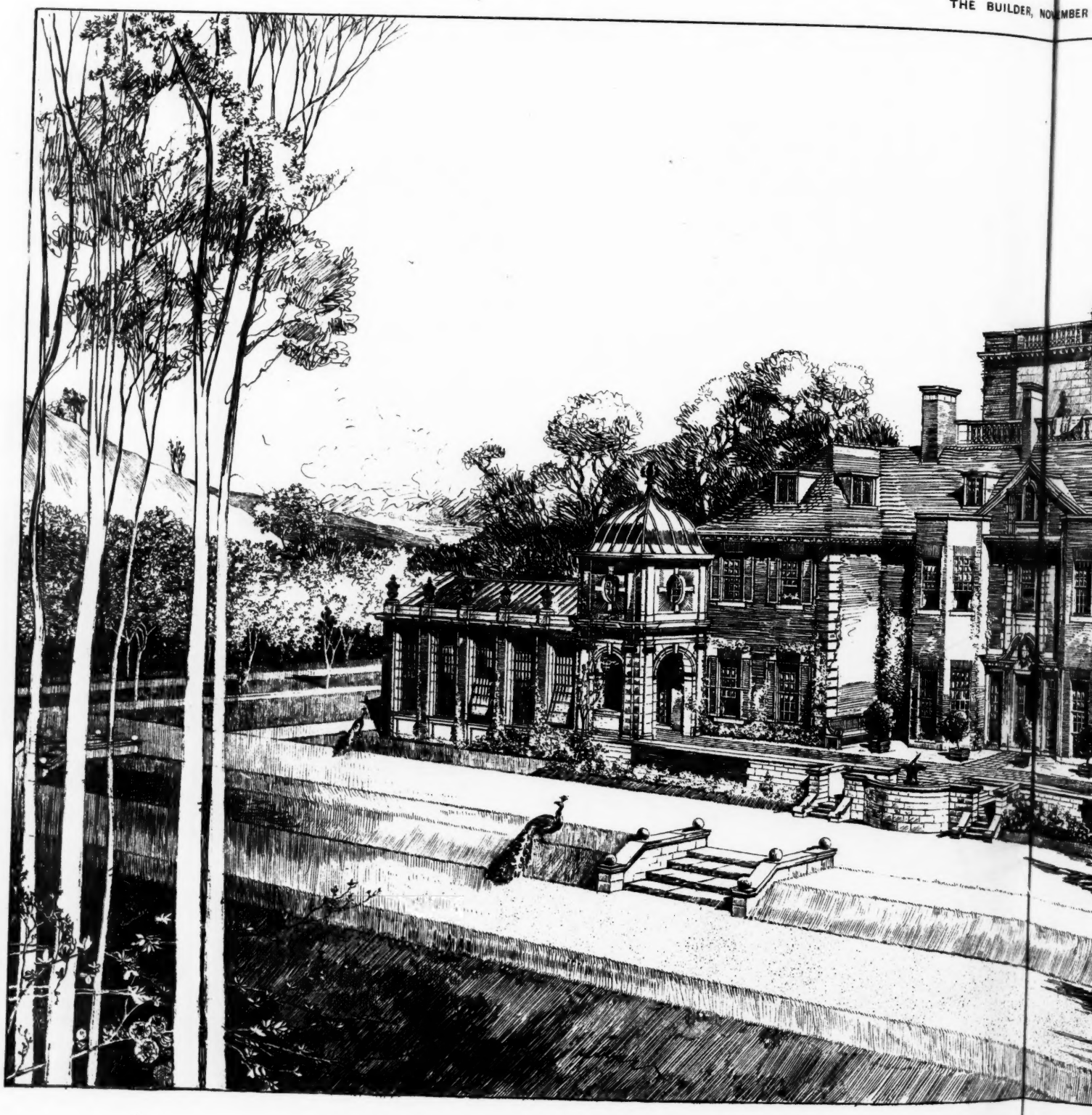

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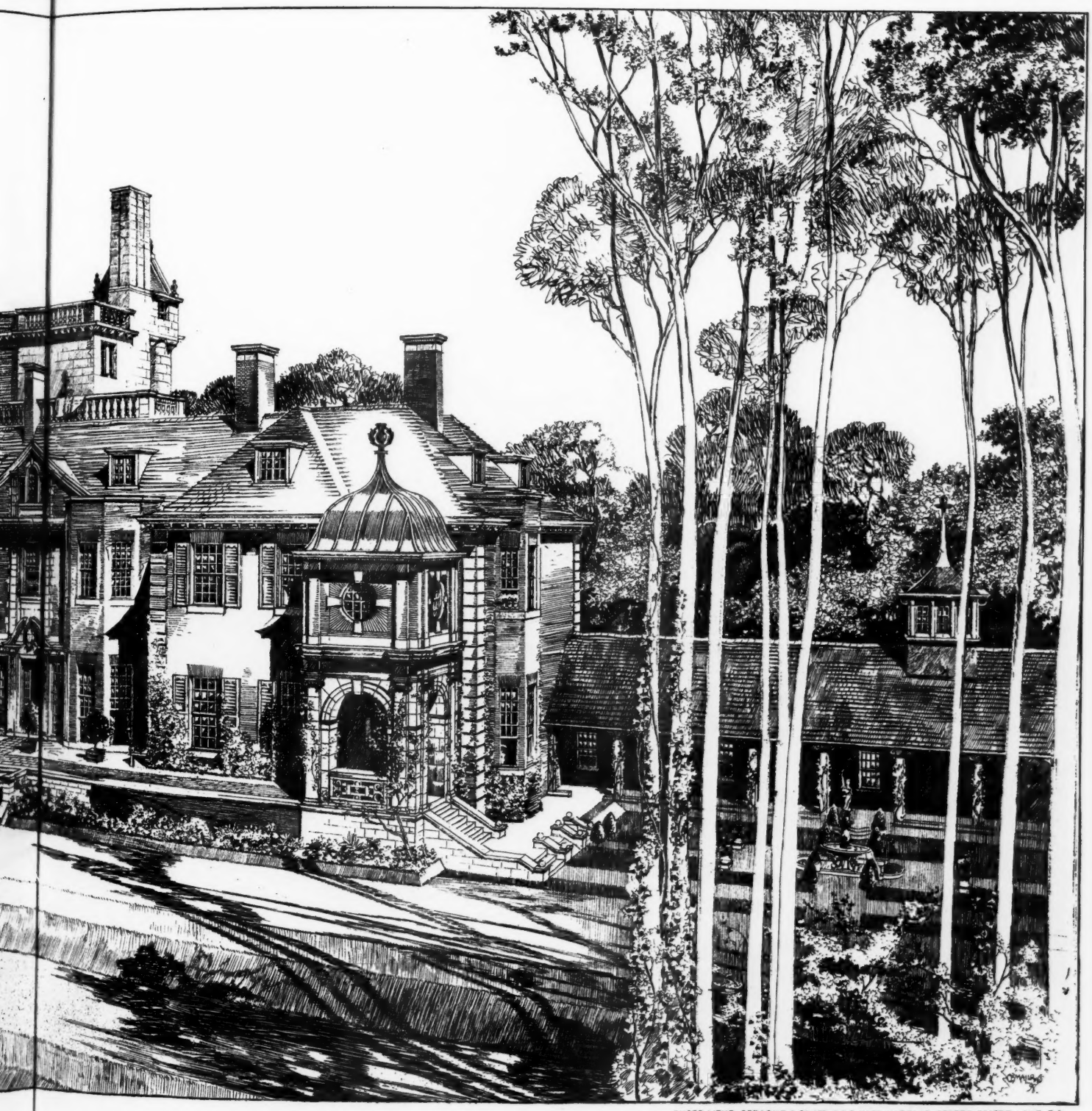

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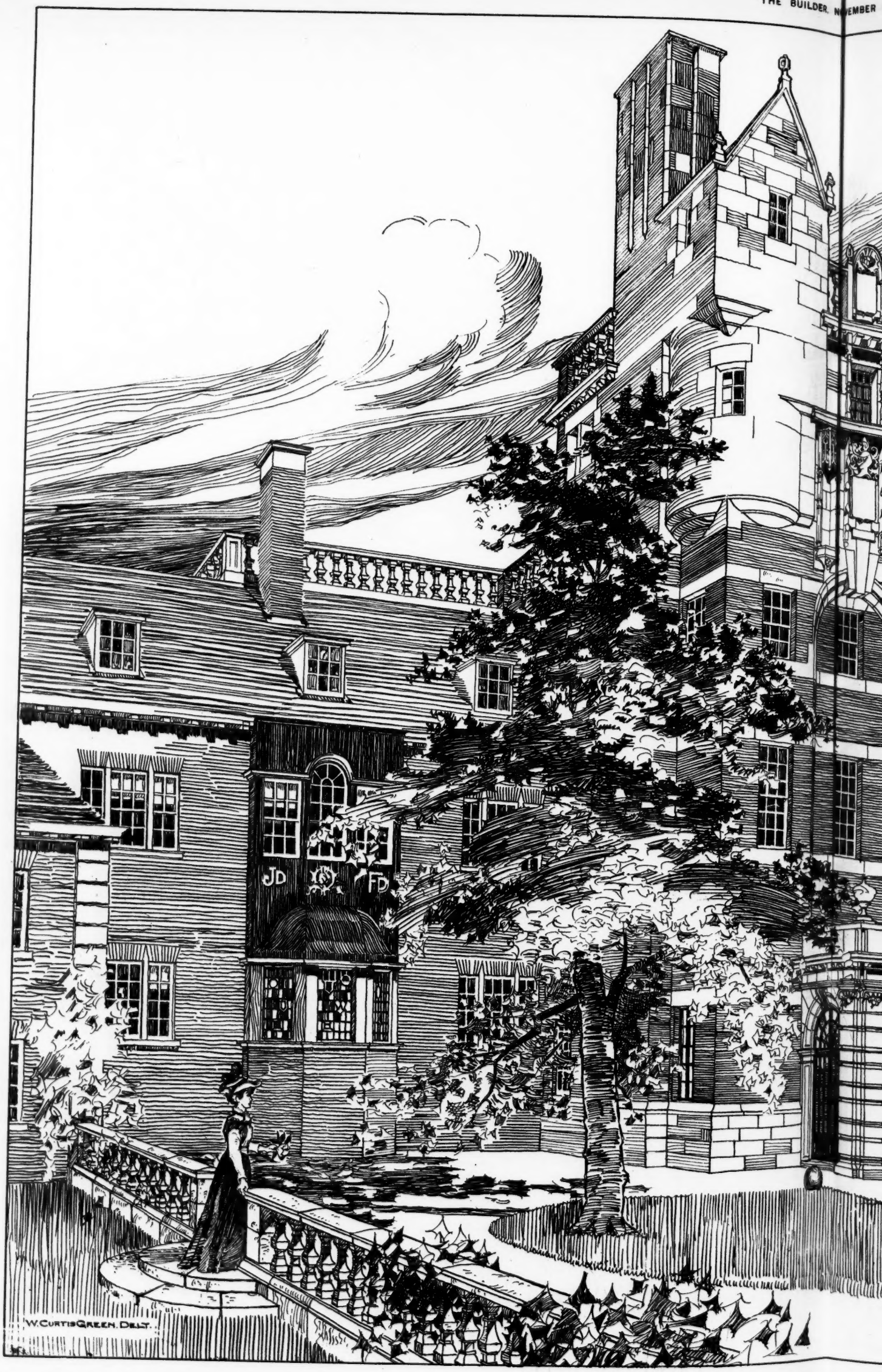

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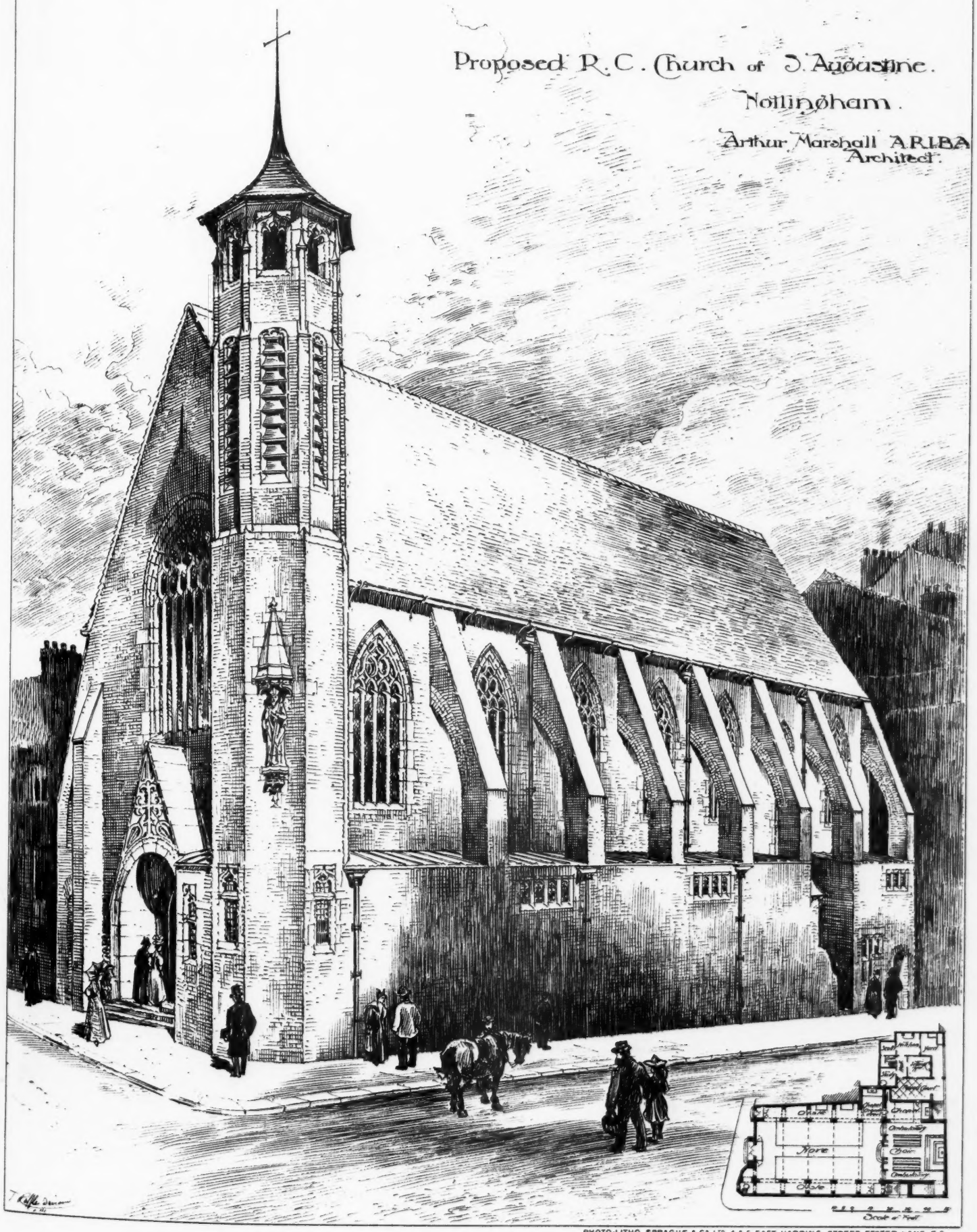

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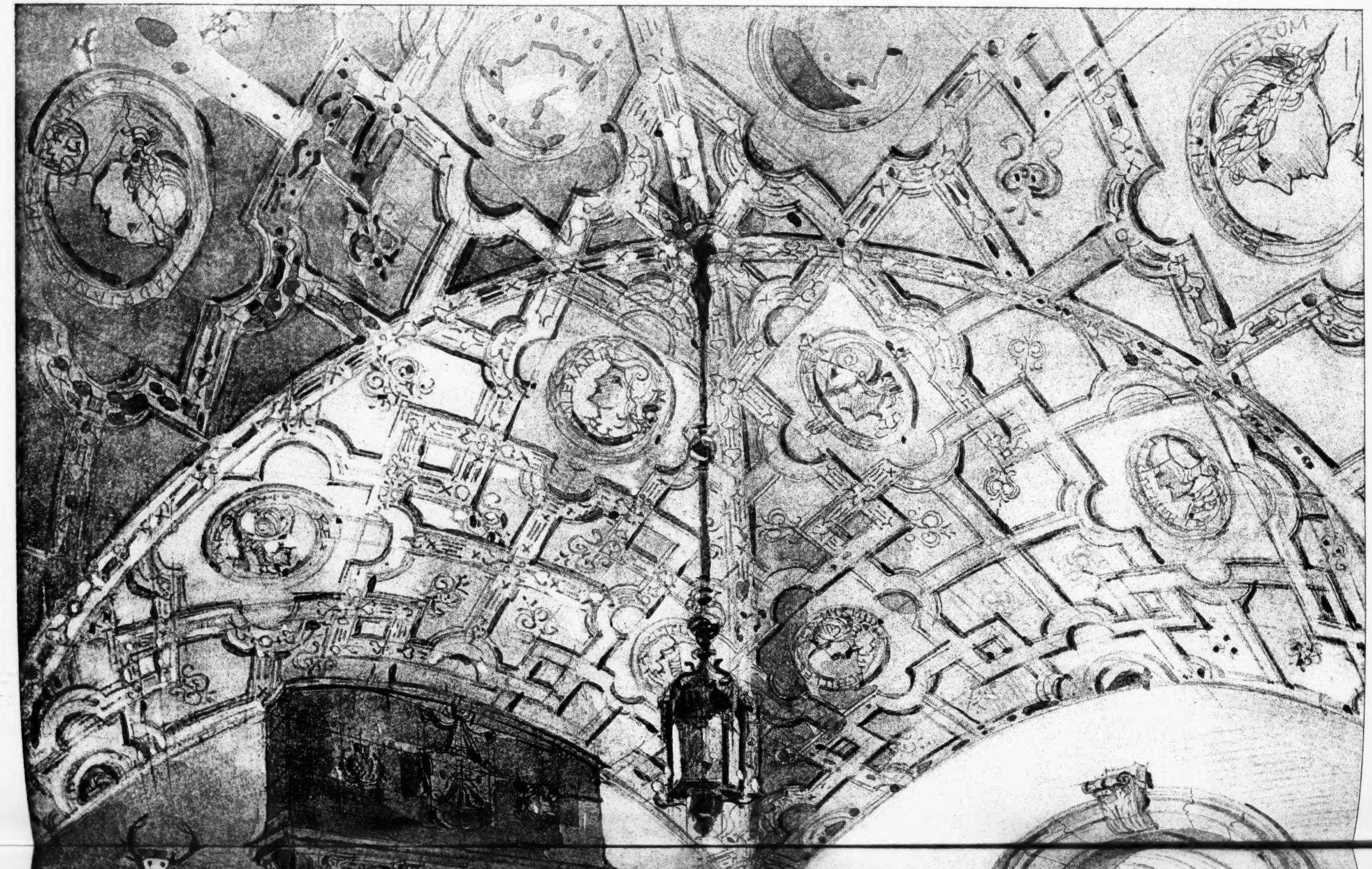

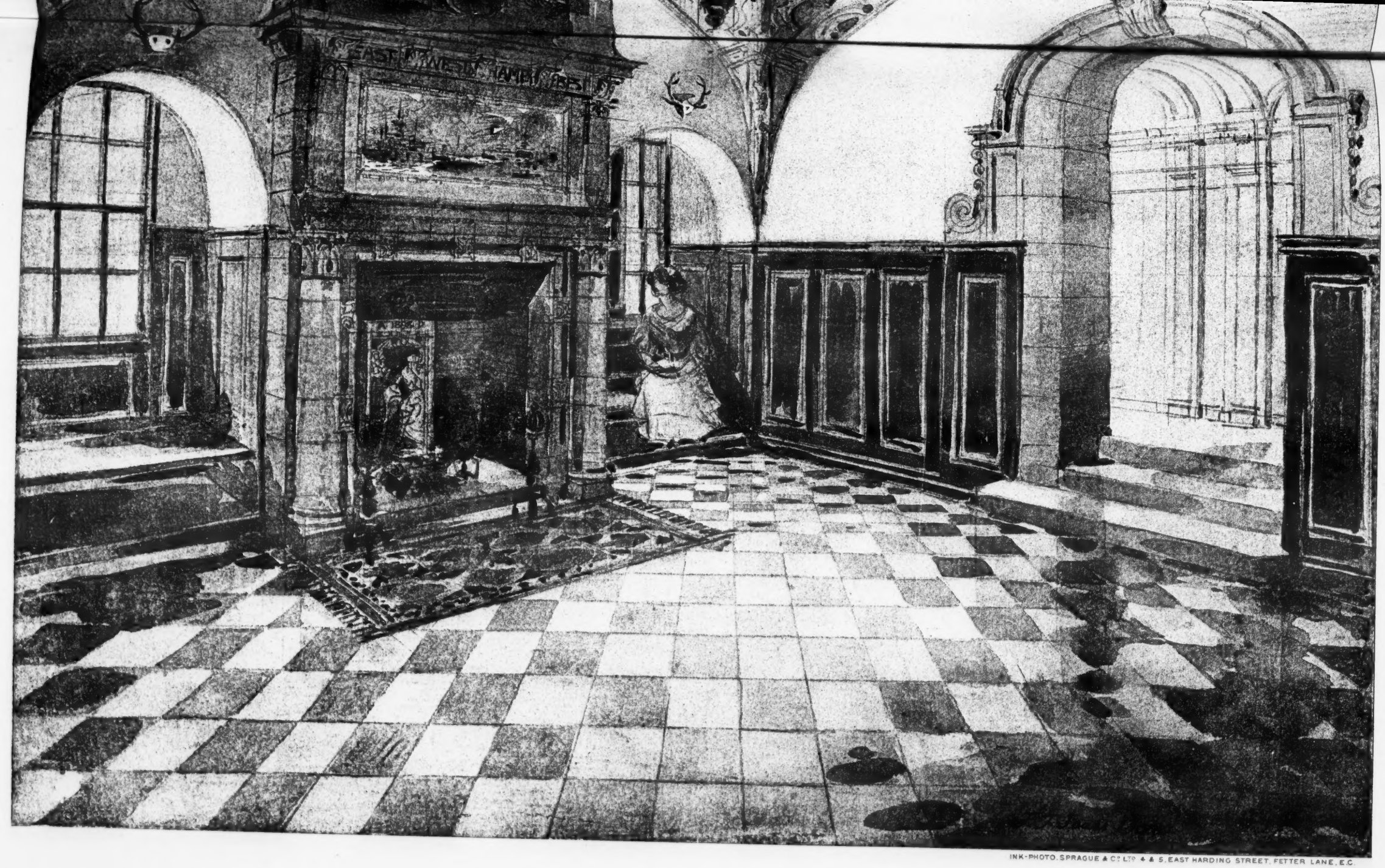

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